

1 UNITED STATES DISTRICT COURT  
2 SOUTHERN DISTRICT OF OHIO  
3 WESTERN DIVISION  
4

5 RICK E. NEWMAN, :  
6 Plaintiffs, :  
7 vs. : Case No. C-1-01-0067  
8 THE PROCTER & GAMBLE :  
9 COMPANY, et al., :  
10 Defendants. :

11 Deposition of ROGER WABEKE, a Witness  
12 herein, taken as upon direct examination by the Defendants,  
13 and pursuant to the Federal Rules of Civil Procedure,  
14 agreement of counsel, and stipulations hereinafter set  
15 forth, at the offices of Beverly Storm, Esq., Arnzen &  
16 Wentz, PSC, 600 Greenup Street, Covington, Kentucky, at  
17 11:00 A.M., on the 9th day of May, 2002, before Kathy  
18 Simpson, a Notary Public for the State of Ohio.  
19  
20  
21

22 TRI-COUNTY COURT REPORTING AND VIDEOTAPE SERVICE  
23 95 SOUTH FOURTH STREET  
24 BATAVIA, OHIO 45103  
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TRI-COUNTY COURT REPORTING

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19 S T I P U L A T I O N S

20 It is stipulated and agreed by and between  
21 counsel for the respective parties that the deposition  
22 of Roger Wabeke, a Witness herein, called as upon  
23 direct examination by the Defendants, may be taken at  
24 this time and place pursuant to the Federal Rules of  
25 Civil Procedure, agreement of counsel; that the  
deposition may be recorded in stenotype by the Notary  
Public, Kathy Simpson, who is also the court reporter,  
and transcribed out of the presence of the witness;  
and that signature of the deponent was expressly waived.

1		I N D E X	
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1 ROGER LEE WABEKE

2 a witness herein, being of lawful age, after having been  
3 duly cautioned and sworn, was examined and deposited as  
4 follows:

5 DIRECT EXAMINATION

6 BY MR. THOMAS

7 Q Will you state your full name, sir.

8 A My full name is Roger Lee Wabeke, that's  
9 W-A-B-E-K-E.

10 Q Sir, my name is Scott Thomas and I'm here on  
11 behalf of the Procter & Gamble Company to ask you some  
12 questions about a report and some prospective testimony in  
13 this case. I gather from looking at your curriculum vitae,  
14 that you're no stranger to giving depositions, I take it?

15 A I'm not.

16 Q Well, my ground rules are probably the same  
17 as everybody else's. If you don't hear my question, let me  
18 know that and I'll repeat it; that's generally not a  
19 problem. If you don't understand my question, let me know  
20 that and I'll do my best to rephrase it in a way that's  
21 clear. It's my job to ask a question that makes sense. And  
22 you're not required to guess at what I'm trying to get at,  
23 so if there's any doubt at all, let me know; otherwise,  
24 we'll just assume that you heard and understood my question.  
25 Fair enough?

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1 A Fair enough.

2 Q Let me hand you two exhibits that have been  
3 marked PG-70, which appears to be a report dated October 27,  
4 2001, and PG-71, which appears to be your curriculum vitae.  
5 First take a look at No. 70. Is that, in fact, a report  
6 that you issued in this case, with some attachments, dated  
7 October 27, 2001?

8 A It is.

9 Q And is that a true and accurate copy of your  
10 report?

11 A I believe so, yes.

12 Q And the opinions and conclusions that you  
13 formed in this case, are they all included in that report?

14 A They are.

15 Q Now, Exhibit 71 is a curriculum vitae that we  
16 got around the same time. Is that a true and accurate copy  
17 of your curriculum vitae -- and I apologize if I'm  
18 mispronouncing that. My Latin is terrible.

19 A I think that's correct. Yes, up until this  
20 date. I didn't bring a correct version. It's essentially  
21 not different. It's essentially the same as this one.

22 Q Sir, could I trouble you to provide Ms. Storm  
23 with a current copy of your curriculum vitae at a later  
24 date? In fact, what I'll do is if you could forward that to  
25 the court reporter and just make a note that we're going to

1 mark that PG-72; is that all right?

2 MS. STORM: Yes, it is. Off the record.

3 (Off-the-record discussion.)

4 Q All right. So what we're going to do is mark  
5 in advance Exhibit 72, which would be the new and updated CV  
6 for Mr. Wabeke.

7 Is there anything that you could tell me as  
8 we sit here about what is different on your current CV from  
9 what appears on the copy that we've got marked as Exhibit  
10 71?

11 A I would say, Mr. Thomas, in general not major  
12 changes, perhaps a few internal publications through the  
13 University and some additional speaking engagements. But  
14 other than that, nothing. And I'll be happy to send a new  
15 one to Ms. Storm.

16 Q Okay. And please be happy to call me --

17 A Either tomorrow or the first part of the  
18 week.

19 Q Please be happy to call me Scott. Nobody  
20 calls me Mr. Thomas. Let's start off with the CV, first  
21 off. And I'm going to -- I'm going to go through this more  
22 quickly and just to confirm in my own head that I digested  
23 it accurately. You were born August 29, 1940, in Detroit,  
24 Michigan?

25 A Yes.

1 Q And you graduated from high school in 1958 at <sup>7</sup>  
2 Redford High School?

3 A Yes.

4 Q That's also in Detroit?

5 A Yes.

6 Q From there, I take it, you did odd jobs,  
7 carpentry and roofing until you joined the Navy in 1960?

8 A That's right.

9 Q And then in the Navy you served as a  
10 Corpsman?

11 A Yes.

12 Q And you were honorably discharged from the  
13 Navy in 1963?

14 A Yes, my active duty ended in 1963. I believe  
15 I had two additional years that I was on inactive reserve.  
16 So officially the discharge date would have been about 1964  
17 or 5.

18 Q From the reserves, but you were discharged  
19 from active duty in 1963?

20 A Yes, right.

21 Q And in 1999, you got a Bachelor's of Science  
22 Degree in Chemistry and Biology from Wayne State University  
23 College of Science.

24 A Yes.

25 Q And when did you begin going back and taking

1 courses at Wayne State?

2 A In graduate school, I'm not sure.

3 Q Well, to start taking the courses that  
4 culminated in the degree in 1998.

5 A I started about 1964 or 65.

6 Q All right. Did you go -- was it part-time at  
7 some point or was it night school or what was that?

8 A It was part-time for, perhaps, the first two  
9 years and then full-time for the last two or three years.

10 Q And between 1963 when you got out of active  
11 duty and when you started doing the part-time work, you were  
12 -- you had gone back to the carpentry and roofing and doing  
13 things of that nature until -- and, perhaps, while you were  
14 attending college during those first two years?

15 A That's exactly right.

16 Q And you started at what was then Wyandotte  
17 Chemicals Corporation in 1976?

18 A Yes.

19 Q So that would have been in your junior year,  
20 perhaps?

21 A Junior or senior, yes.

22 Q And what did you do at BASF or Wyandotte,  
23 excuse me?

24 A I was hired as an industrial hygiene  
25 technician and I operated industrial hygiene.

1 Q What does an industrial hygiene technician  
2 do?

3 A Well, I was responsible for a variety of  
4 issues at plants that BASF, or at the time Wyandotte  
5 Chemicals Corporation, had throughout the United States and  
6 Canada. I primarily inspected plants, site visits with an  
7 eye toward chemical exposure to workers in these sites. I  
8 evaluated the exposures, took ventilation measurements,  
9 obtained the air samples, studied the work practices and  
10 prepared reports with the findings with recommendations as  
11 appropriate.

12 Q And what kind of chemicals were you involved  
13 with doing this work?

14 A Wyandotte Chemicals manufactured perhaps  
15 hundred of chemicals. Many were inorganic in nature, others  
16 were organic in nature. The company manufactured basic  
17 chemical such as chlorine, caustic soda, hydrogen, soda ash,  
18 sodium bicarbonate. It manufactured coal tar chemicals and  
19 manufactured a variety organic chemicals used in polymer  
20 formulations and paints, in disbursements and surfactants,  
21 again a very broad mix of chemicals.

22 Q Did they manufacture sulfur dioxide?

23 A No, we purchased it, but did not manufacture  
24 it.

25 Q Was it used in the chemical processes that

10

1 were involved in making some of these other compounds?

2 A It was used essentially in one process in the  
3 manufacture of detergents and synthetic detergents.

4 Q Now, in evaluating the ventilation and work  
5 practices and doing air sampling, I take it you were  
6 monitoring the air in the occupational workplace for the  
7 presence of the kinds of chemicals that we're talking about?

8 A Yes.

9 Q And very often in these industrial practices  
10 the very active manufacturing, whether it be equipment or  
11 compounds at BASF, these chemicals are released into the  
12 work atmosphere and an industrial hygienist or someone like  
13 yourself will look at that environment to make sure that the  
14 concentration, if you will, of the various chemicals are  
15 within safe limits; is that fair?

16 A That's one thing that's done. That's not the  
17 entire picture, but that is part of it, yes.

18 Q And what were your hours like? I noticed  
19 from your CV that you worked from '67 to 1972 at Wyandotte.  
20 That embraces probably the last two or three years of your  
21 undergraduate work. What kind of hours were you putting in  
22 at Wyandotte?

23 A Well, as it turns out, I needed one course to  
24 get my Bachelor of Science Degree in Chemistry and Biology.  
25 When I hired in at Wyandotte Chemicals, I had taken all but

11  
1 that one course. So I took that one course in night school

2 in about 1969. So it's not a true reflection that I was  
3 working full-time and going to school part-time for the  
4 first two years of my employment at Wyandotte Chemicals.

5 Q Okay.

6 A My hours --

7 Q Well, let me just say this. I infer then  
8 that it's fair to say that between '67 and '72 your work at  
9 Wyandotte was what we would generally call full-time?

10 A That's right.

11 Q And you continued there after your  
12 graduation?

13 A Yes.

14 Q And your title appeared to change from  
15 industrial hygiene technician to assistant industrial  
16 hygienist. What if anything was changed in the duties that  
17 you performed at that time?

18 A I can't recall any change in my duties.

19 Q A fancier title and perhaps better pay?

20 A Yes.

21 Q And then in 1975, you got a Master's of  
22 Science in Industrial Hygiene and Occupational and  
23 Environmental Health; is that correct?

24 A Yes.

25 Q And that was also at Wayne State?

1 A Yes.

2 Q And when did you begin working toward that  
3 degree?

4 A About 1971, 1970 perhaps.

5 Q All right. And so mindful that you also went  
6 -- you worked at Wyandotte until '72, and then from '72 on  
7 you began working at Ford?

8 A Yes.

9 Q And so tell me about how you juggled the  
10 education and the work?

11 A Much like any graduate student or any student  
12 that is working and going to school. You have very little  
13 free time. My classes were offered almost exclusively in  
14 the evening, say, from 4:30 to perhaps as late as 10:00 at  
15 night.

16 Q So generally speaking you were in a night  
17 program working full-time at Ford?

18 A Yes.

19 Q And were your duties at Ford between 1972 and  
20 1977 roughly equivalent to the kinds of activities that you  
21 described earlier that you did at Wyandotte?

22 A Well, obviously the nature of the businesses  
23 were different. But as an industrial hygienist, we looked  
24 at all the factors in the workplace that could have an  
25 impact on Ford employees, including chemical exposures,

1 physical agents, biological factors and ergonomic issues.

2 Q What is a study of Industrial Hygiene  
3 Occupational and Environmental Health at the Master's level,  
4 what does that entail?

5 A Courses, a thesis. I chose the thesis option  
6 over the essay. A variety of courses in the recognition,  
7 evaluation and control of stress agents within the workplace  
8 that can affect the comfort and indeed the health or even  
9 the life of workers in those environments.

10 Q Now, in 1977 I'm reading -- inferring from  
11 this that your duties at Ford changed in the sense that you  
12 became involved in the industrial hygiene and toxicology  
13 laboratory; is that right?

14 A Yes.

15 Q Tell me what that involved.

16 A Well, I was a supervising industrial  
17 hygienist. At the time, we developed a new laboratory, a  
18 new testing facility for the environmental sampling that our  
19 department collected throughout Ford workplaces. I was the  
20 director of the laboratory as well as the supervisor of  
21 industrial hygiene.

22 Q So I take it that half -- I don't mean this  
23 quantitatively, but in one role you were in charge of the  
24 laboratory work that involved the testing of samples that  
25 were collected in Ford facilities?

14

1 A I managed the entire department. And I  
2 believe that started about 1978, '79, '77. I'm not sure of  
3 the year. And then I had two groups, the laboratory  
4 function and the field staff. The field industrial  
5 hygienists who entered the various plants to conduct their  
6 studies under my direction, and then the laboratory staff  
7 that would analyze the samples that were collected by those  
8 people.

9 Q Okay. You used a phrase "industrial hygiene  
10 and toxicology program," what does mean?

11 A Perhaps it should more be aptly phrased the  
12 laboratory was the industrial hygiene and toxicology  
13 laboratory at Ford Motor Company. We focused on  
14 occupational toxicology, not medical toxicology. We were  
15 looking at the effects of chemicals primarily on the health  
16 of Ford employees.

17 Q I'm not criticizing the label, just trying to  
18 --

19 A Well, looking back on it perhaps it would  
20 have been more appropriately labeled, "The occupational  
21 toxicology laboratory." But essentially we were concerned  
22 about the potential adverse health effects of chemicals, for  
23 the most part, on Ford employees. That involved testing,  
24 not animal testing as traditional toxicologist do, but the  
25 testing of environment samples collected by field industrial

1 hygienists.

2 Q But the testing that was done was related to  
3 samples on Ford premises?

4 A For the most part, yes.

5 Q At any time was there -- in your work at  
6 Ford, was there a collection of samples or testing of  
7 samples related to sulfur dioxide?

8 A Yes.

9 Q And in what process or activity of the Ford  
10 Motor Company would sulfur dioxide be a potential compound  
11 in the atmosphere, the work atmosphere?

12 A There were two major processes that seized  
13 our attention. The manufacture of cores and grey iron  
14 foundries. And of the Ford foundries, I believe we had six  
15 at the time. Only three had the process. One in Michigan;  
16 one in Windsor, Ontario; and one in Cleveland. And the  
17 other major process where Ford employees could be exposed to  
18 sulfur dioxide gas was in the steel mills in Dearborn,  
19 Michigan. There were two plants. There was a basic oxygen  
20 furnace and an electric re-mill furnace. There were  
21 occasional studies done on a sporadic basis for sulfur  
22 dioxide at certain battery charging operations, but those  
23 were essentially non-problematic.

24 Q Now, these -- let me make sure I understand  
25 that first expression you said. Core in grey iron --

1 A Foundries.

2 Q -- foundries. What does that mean?

3 A Let's say that -- perhaps I can describe it.

4 Let's say we wanted to make a cast metal cup in which we

5 would pour molten metal in this case iron to make the cup.

6 We will have to have the box; a mold, a molded material; and

7 then a space. The space would be the cup. The core would

8 be that portion of this casting process that would be in the

9 -- it would form the interior volume of the cup. And sulfur

10 dioxide in this process would actually cure the chemicals

11 that are used to make the core. After the metal solidifies,

12 the core and the molds are broken away and we have a metal

13 cup.

14 Q Where is the grey iron?

15 A The grey iron would be the material to make

16 the cup. Not that cups are made of grey iron, but I'm

17 trying to give an example.

18 Q And how does the sulfur dioxide get used?

19 A It was a binding agent in the core-making

20 process to bind the grains of sand together along with

21 polymers.

22 Q Okay.

23 A And instead of cores, these were engine

24 blocks, pistons, and crank shafts and things like that.

25 Q Now, in these processes that you've described

17  
1 in that foundry, that kind of core foundry and in the steel  
2 mills, I take it that these processes necessarily release  
3 sulfur dioxide into the working atmosphere of the folks who  
4 are performing this work to one extent or another?

5 A That's right.

6 Q And part of the job of the industrial  
7 hygienist is to keep tabs on that work atmosphere and ensure  
8 that the sulfur dioxide in that work area does not approach  
9 dangerous levels or levels that are injurious to health; is  
10 that fair?

11 A That's part of the job. The air sampling in  
12 and of itself is not the job, it's the overall chemical  
13 safety of the entire process.

14 Q I don't mean to oversimplify.

15 A No, I understand.

16 Q That is the general idea. You figure out  
17 what the air atmosphere in that work environment is and  
18 analyse it, and then you take whatever steps are necessary  
19 so that the work can be done safely by the workers in there.

20 A Yes, but air samples are not done routinely  
21 in all processes. The overall objective is to have a system  
22 in place to prevent exposures. Air sampling on some  
23 occasions might be part of that, but not as a matter of  
24 routine.

25 Q Okay. That takes me back to my earlier

18

1 question. I just got the impression that in these various  
2 activities -- that's why I think I used the word  
3 "necessarily" -- when you engage in these activities, some  
4 sulfur dioxide is going to go into the work environment  
5 merely because you're engaging in core foundries where this  
6 sulfur dioxide is used as a binding agent or assistor or  
7 it's used in some other -- to some other end in the oxygen  
8 furnace or something like that; am I wrong?

9 A Yes. The objective isn't that sulfur dioxide  
10 and gas and other air contaminants do not enter the work  
11 environments. They can be released in a process, but the  
12 objective is to control that release such that the  
13 contaminants don't reach the breathing zone of the workers.  
14 So while there is a release in the process, ideally it's not  
15 to expose the workers, it's to be exhausted in such a way  
16 the workers are not exposed.

17 Q Let me ask it this way. In these processes  
18 was the concentration of sulfur dioxide in the working  
19 atmosphere where the operators were, was that concentration  
20 zero?

21 A No, it was -- well, at some processes with  
22 some core-making machines it was non-detectable, it was at  
23 ambient concentrations. In other situations it was out of  
24 control and required attention, so it was variable.

25 Q And that was part of your job to control it?

1 A That's right.

2 Q In 1987 you joined Chemical Risk Management?

3 A Yes.

4 Q And what is Chemical Risk Management?

5 A Well, it's my company, as small as it is.

6 It's not a Ford Motor Company. We are an environmental  
7 consulting firm. We provide services in industrial hygiene  
8 and chemical safety engineering and environmental pollution,  
9 primarily to small companies in the mid-west.

10 Q So what happened in 1987 when you left Ford?

11 A I went into business for myself. I excepted  
12 a position at Wayne State University as an adjunct professor  
13 in the Department of Occupational and Environmental Medicine  
14 and I started consulting for companies on industrial hygiene  
15 issues and safety engineering.

16 Q Okay. How many people were in Chemical Risk  
17 Management when you opened your doors in 1987?

18 A Initially it was me. We had as many as  
19 seven. Right now it's just me. Typically over the years  
20 three people, consulting engineers.

21 Q Sometimes when this -- when a person does  
22 this, they merge with some other entity that already exists,  
23 maybe it's a shell corporation, maybe it's a company that a  
24 person's retiring and they take it over. I guess my  
25 question is did Chemical Risk Management perform any of

1 these kinds of services that it did while you were the  
2 president prior to 1987?

3 A No. I should mention that I've been a  
4 consulting industrial hygienist for 33 years, perhaps. But  
5 after 1987, I was doing business as Chemical Risk  
6 Management. Prior to that time, it was just under my name.

7 Q All right. What kind of work did you do  
8 prior to 1987 as a consulting industrial hygienist in your  
9 own name?

10 A I consulted for companies in the Metropolitan  
11 Detroit area. I consulted for attorneys in pretty much the  
12 Metropolitan Detroit area. That was pretty much it.

13 Q And what kind of work would be entailed in  
14 the consulting on behalf of companies?

15 A Conducting site visits where small companies  
16 generally had a concern regarding occupational exposures of  
17 their employees to whatever was of interest to them or of  
18 concern to them, primarily in the area of chemical  
19 exposures. A variety of plants, small tool and die plants,  
20 small potato chip plant, very diverse. We've got in a  
21 tremendously diverse segment.

22 Q And on behalf of attorneys?

23 A Those were primarily toxic tort issues. Not  
24 unfrequently an attorney would call to see if there was a  
25 basis to a claim from an industrial hygiene perspective and

1 sometimes there were.

2 Q Without knowing, I'm going to presume or  
3 guess that the amount of work you did for attorneys prior to  
4 1987 would be a small fraction of the work that you've done  
5 since 1987; is that fair?

6 A That's fair.

7 Q Can you give us an estimate of how frequently  
8 you might have given depositions or testified at trials  
9 prior to 1987?

10 A It's difficult to sort out because when I was  
11 at Ford, I was deposed quite frequently on behalf of Ford  
12 Motor Company and Wyandotte Chemicals Corporation. But  
13 other than that, on behalf of my employer I would say maybe  
14 twice a year for 20 years. I mean, it's a very rough  
15 estimate where I was acting as an expert on behalf of an  
16 attorney in an action.

17 Q Well, with respect to your work -- your  
18 testimony in connection with Ford and Wyandotte, I get the  
19 impression that would mostly be in the context of worker's  
20 compensation hearings?

21 A It was at Wyandotte Chemicals, with the  
22 exception of perhaps a few cases that had product liability  
23 issues associated with them on warnings and adequate  
24 disposers of the contents of a product. And at Ford several  
25 were worker's comp. But as I look back on it, the lion's

1 share had to do with product liability issues regarding, <sup>22</sup>  
2 example, carbon monoxide exposure of occupants inside Ford  
3 Motor vehicles or exposure of certain chemicals that Ford  
4 would sell to dealerships that would end up in, say, the  
5 garage of homeowners.

6 Q Prior to 1987, had any of your consulting  
7 work, either on behalf of other companies or on behalf of  
8 attorneys, involve sulfur dioxide?

9 A I don't think so. It's been a long, but  
10 nothing comes to mind. It's highly unlikely.

11 Q Tell me about your post 1987 connection with  
12 Wayne State University.

13 A I've been on the faculty since. I teach  
14 three courses at Wayne State University. I work in the  
15 Department of Family Medicine, the Division of Occupational  
16 Environmental Medicine. I provide lectures to residents in  
17 Family Medicine and to residents in Occupational and  
18 Environmental residency programs. I conduct site visits  
19 with the physicians to various facilities primarily in the  
20 Metropolitan Detroit area to familiarize the doctors with  
21 types of exposures workers might encounter, people they will  
22 see as patients in their clinics. I'm involved in research  
23 through the department. I'm in the department on an  
24 as-needed basis as a consultant to the department on issues  
25 regarding causation of occupational diseases and injuries.

23  
1 Should a physician, for example, have a concern that their  
2 patient might have an occupational component in terms of the  
3 pathology, they will contact me to see if there is any merit  
4 to that.

5 Q Tell me the names of the three courses that  
6 you teach.

7 A The first course is Occupational and  
8 Environmental Medicine; the other course is Risk Management;  
9 and the third, which I'm currently teaching, is Principles  
10 of System and Process Safety Management.

11 Q Principles --

12 A Of System -- or Systems -- and Process Safety  
13 Management. And in addition to that, I give regular  
14 lectures in the Chemistry of Industrial Processes, that is  
15 to say I don't teach entire courses, just selected lectures,  
16 and lectures of residents in Family Medicine and  
17 Occupational and Environmental Medicine.

18 Q What is the scope of that -- well, first let  
19 me ask you this. You said "and now I'm teaching this." Is  
20 that merely a reflection that this is a course that's  
21 currently in session?

22 A Yes, that's right. Each of those courses is  
23 offered one a year and they are not coincident.

24 Q So during one academic year you're always  
25 teaching and it will be one of these three courses?

1 A Yes, except for the summer.

2 Q And tell me about the scope of risk  
3 management. What does that mean?

4 A Well, some would say in the insurance  
5 industry it's cost containment. The course is part of a  
6 Master of Science Degree in Industrial Hygiene. And the  
7 course is bifurcated into statistics and concepts of risk  
8 management. Risk management is attempts to introduce the  
9 student to processes with injury and harm potential,  
10 starting through hazard assessment, risk assessment, and  
11 then finally the management of risk by a variety of  
12 techniques.

13 Q And students in this course are pursuing a  
14 Master of Science Degree in Industrial Hygiene, correct?

15 A Or in chemical engineering. We get students  
16 from engineering schools as well as -- well, actually three  
17 schools: The School of Medicine -- College of Medicine,  
18 School of Engineering, and the College of Pharmacy and  
19 Health Sciences.

20 Q All right. But fair to say, this is not a  
21 course where you're teaching medical-doctors-to-be.

22 A No, no, they are. I just finished teaching  
23 the course Occupational and Environmental Medicine.

24 Q Sticking with risk management.

25 A Risk management. We will get two or three

1 out of maybe twelve students that take courses as an  
2 elective for physicians, but they are not exclusively  
3 medical doctors, no.

4 Q Let me phrase it a different way. You would  
5 agree with me, I would assume, that the information you're  
6 presenting to the students in this risk management course in  
7 content is not teaching anyone the practice of medicine; is  
8 that fair?

9 A Not the clinical practice of medicine, that's  
10 fair, that's right. But there are concepts covered in the  
11 course that address medical issues as might be encountered  
12 by a physician specializing in Occupational Medicine.

13 Q Certainly?

14 A No, I'm not a physician. I'm not teaching  
15 clinical practice issues, but other issues regarding  
16 occupational medicine, yes.

17 Q Well, when we say "other issues regarding  
18 occupational medicine," what other issues -- I guess my  
19 impression from hearing you is that the issues that you're  
20 talking about are helping the doctor become aware of risks  
21 and hazards associated, for example, with some of the  
22 chemicals that we've talked about in terms of their  
23 toxicological effects on humans; is that fair?

24 A That's part of it, yes.

25 Q Now, Principles of Systems and Process Safety

26

1 Management, is that also a course that, to me, just not  
2 knowing anything, sounds like it would also fall in that MS  
3 Degree in Industrial Hygiene; is that right or no?

4 A Partially. It can be an elective course for  
5 that degree. It's not a core course for the degree, but it  
6 is a core course for a graduate certificate in safety.

7 Q And what is a graduate certificate?

8 A A graduate certificate typically is -- it can  
9 be considered, say, the first twelve to fifteen hours of a  
10 Master of Science Degree. And it's a growing trend  
11 throughout the country, wherein a person might have an  
12 interest in certain things. If they do well grade-wise  
13 during the graduate certificate, that might spur them on to  
14 proceed for additional graduate training, perhaps a master's  
15 degree or doctorate.

16 Q And I noticed in your own CV you talked about  
17 a post-graduate certificate in hazardous materials  
18 engineering, that was -- a year later you got your Master's  
19 of Science in Chemical Engineering in Hazardous Material and  
20 Environmental Pollution and such. When I read that, I kind  
21 of got the same impression that you were just describing.  
22 It's kind of like a milestone on the path to a Master's of  
23 Science?

24 A Exactly.

25 Q Is that fair?

1 A Exactly.

2 Q And once you get a Master's of Science, you  
3 really don't -- you don't dwell on the certificate, is that  
4 fair? Because the Master's of Science is a higher level of  
5 achievement?

6 A I don't know what you mean by "dwell" on it.

7 Q It's not separate and apart.

8 A It's part of it, right.

9 Q You can't get a Master's of Science in  
10 Chemical Engineering with Hazardous Materials without having  
11 qualified for a post-graduate certificate; is that fair?

12 A That's a good question. I suppose you could,  
13 I don't know that.

14 Q How are you going to jump the first twelve to  
15 fifteen hours?

16 A Well, you take them.

17 Q See what I'm saying?

18 A That's right. I guess you would have to. I  
19 never thought about it that way; that's right.

20 Q Now, this Occupational Environmental Medicine  
21 course, tell me about the scope of that.

22 A This course has been offered for at least  
23 eight years. I was involved from the get-go, the past seven  
24 to eight years at Wayne State University School of Medicine.  
25 It's a course that introduces the students, or almost I

1 would say three-fourth physicians, to those environmental  
2 factors in the workplace that can cause adverse effects in  
3 workers and ostensibly their patients at one time or  
4 another. We introduce the concepts of recognition of  
5 hazards and the nature of those stressors in the workplace  
6 that can cause pathology and adverse effects in people.  
7 It's a survey course addressing chemical factors such as  
8 gases, vapors, dust, fumes, mist, smoke; physical factors,  
9 which would include noise, ionizing and non-ionizing  
10 radiation, hypothermia, hyperthermia, microwaves, lighting;  
11 biological factors and ergonomic factors with an emphasis on  
12 manual material handling operations.

13 Q And I take it that this course might be of  
14 interest to a student, perhaps a doctor who was either  
15 intent on pursuing a career in addressing health issues  
16 among industrial workers, or, perhaps, doing research on  
17 this kind of toxicology; is that fair?

18 A That's fair. Most I would say are  
19 practitioners with active practices or that's their  
20 objective. Very few are involved in research as such.

21 Q And what I think I'm hearing is you share  
22 with these students your perspective on things that are  
23 going on in the industrial world much the same way that you  
24 explained to me a few moments ago about the core processes  
25 at that one foundry and the chemicals that are involved in

1 the various manufacturing processes, and essentially  
2 highlight to them to increase their awareness of these  
3 potential agents that can cause injury to industrial  
4 workers. So that when Joe Industrial Worker comes in their  
5 office and when the doctor takes a history and they say what  
6 do you do for a living and he says, "Well, I work in a steel  
7 mill," a light goes off in the doctor's mind and it reminds  
8 the doctor to check various things that might be existent to  
9 see whether that occupational exposure may have a factor in  
10 what's going on medically with the patient; is that fair?

11 A That's fair.

12 Q Now, the converse of that is -- and what I  
13 want to understand is -- I take it that you're not teaching  
14 the doctors medicine in terms of how to be a doctor in  
15 diagnosing, treating, monitoring, prescribing, whatever the  
16 care requires for the proper treatment of a patient that's  
17 been exposed to a chemical that you might well discuss in  
18 your class; that part of it is not part of your course; is  
19 that fair?

20 A That's fair.

21 Q Okay. How would you break down for me your  
22 time with respect to the time you spend teaching your course  
23 and -- I'll say that. I know it might be three courses, but  
24 at any one time you're teaching one course -- did I get that  
25 right?

1 A Yes. Except for the summer months.

2 Q When you're not teaching?

3 A Right.

4 Q But occasionally you're going to teach  
5 workshops or fragments of these courses to smaller groups  
6 that have a particular interest in that subject?

7 A Yes.

8 Q So let me just over generalize and say that  
9 at any point in time you may have your academic hat on or  
10 you might have your Critical Risk Management hat on. What  
11 would you tell me would be the breakdown of your time  
12 between those? Ten percent wearing this hat, ninety percent  
13 wearing that hat? How would that break out?

14 A I would say over a year, fifteen percent of  
15 my time -- maybe even 20 -- let's say fifteen percent of my  
16 time is in the area of teaching and research, but that's  
17 very broad. That would include courses that I teach,  
18 lectures to physicians in our department, that would be  
19 research activities with my colleagues. I would say fifteen  
20 to twenty percent and that's been fairly steady over the  
21 years.

22 Q Now, tell me a little bit about this Wayne  
23 State University School of Medicine. Your area where you  
24 teach is in a division of the Department of Family Medicine;  
25 is that right?

1 A That's right.

2 Q Do you teach in any other divisions or  
3 departments of the University?

4 A Yes.

5 Q What is that?

6 A The course that we were discussing,  
7 Occupational Environmental Medicine, is offered through the  
8 Department of Community Medicine. And it's jointly offered  
9 through the School of Pharmacy and Health Professions -- or  
10 Health Sciences, pardon me. So I have an appointment in  
11 both schools; that is to say that the School of Medicine and  
12 the College of Pharmacy and Health Sciences. The other two  
13 courses are exclusively through the School of Pharmacy and  
14 Health Sciences. They are all through the graduate schools  
15 of each of those departments.

16 Q Let me see if I've processed what you said.  
17 I take it, then, that we can say that all of these three  
18 courses are offered through the College of Pharmacy and  
19 Health Sciences of Wayne State University; however, the  
20 Occupational and Environmental Medicine course is also  
21 offered through the Division of Occupational and  
22 Environmental Medicine, which is part of the Department of  
23 Family Medicine?

24 A That's right.

25 Q Is that right?

1 A That's right.

2 Q Now --

3 A Sounds convoluted.

4 Q No, I understand. Is your title -- it's  
5 listed here as "adjunct professor and resident lecturer."  
6 Is that the same in both the College and Pharmacy of Health  
7 Sciences as well as the Division of Occupational and  
8 Environmental Medicine of the Department of Family Medicine?  
9 Or is the title of those teaching posts different?

10 A That's a good question. I don't know.

11 Q The reason I ask, I looked at -- I was  
12 surfing on the internet and I found in this College of  
13 Allied Sciences that they've got professors, associate  
14 professors, adjunct associate professors, assistant  
15 professors, adjunct assistant professors, clinical assistant  
16 professors and they've got names under all of these.

17 A Is this at Wayne State?

18 Q Yes, sir. And you're listed not under any of  
19 those titles, but as what they call an adjunct instructor.  
20 Now, I don't know if that makes any difference. Is that --

21 A It doesn't make any difference to me. I  
22 don't care.

23 Q Okay. But so I guess what I'm saying is your  
24 title hasn't changed in any respect?

25 A I really don't know. I cannot be a clinical

1 professor because I'm not a physician. I don't teach  
2 clinical medicine. Other than that, I don't know the  
3 distinction between the various titles.

4 Q Okay.

5 A My students call me doctor, but I'm not.

6 Q Well, with the complexity of the subject  
7 matter that you're teaching, I'm not surprised. Then you  
8 went for a second Master's in Chemical Engineering and you  
9 got that degree in 1992. Was that also kind of working at  
10 night or how was that?

11 A Part-time at night, yes.

12 Q And I guess I'm -- why was the interest there  
13 in chemical engineering as opposed to -- can you go -- can  
14 one pursue a doctorate in your first Master's?

15 A At some universities I believe that's  
16 possible. A Doctorate in Industrial Hygiene is not  
17 available in the Detroit area. I believe the University of  
18 Michigan offers a doctorate. I had no desire to become a  
19 PhD, if you will, in a very specialized area. I chose this  
20 program because I felt that I could provide more technical  
21 services to my clients. Quite simply, I didn't want to be  
22 the world's expert in a very narrow area, that would be of  
23 little benefit to my clients.

24 Q And meanwhile, while you're doing this  
25 additional coursework, you did an internship at -- between

1 1990 and 1992 in Hazardous Medical Biohazard Chemical Waste  
2 Management. Can you tell me about that?

3 A That was part of the degree requirement. I  
4 arranged to do that internship with the Detroit Medical  
5 Center. Having an office within one of their major  
6 buildings, I saw some issues that I was also being consulted  
7 on by numerous people throughout the facility. So I thought  
8 it was natural to combine that internship through the course  
9 requirements and my professional responsibilities.

10 Q The curriculum vitae indicates at some point  
11 also in your -- I guess in the signature block,  
12 "professional engineer," what does that mean?

13 A A person who has completed engineering  
14 courses and practices engineering in the area of a  
15 specialty. I focus on chemical safety engineering and  
16 hazardous materials.

17 Q Are you licensed as a professional engineer  
18 in the State of Ohio?

19 A No, I'm registered as a safety engineer, but  
20 I'm not a licensed professional engineer.

21 Q And where is that registration?

22 A It's in Illinois with the America Society of  
23 Safety Engineers in the Professional Engineers Division.

24 Q Are you licensed as a professional engineer  
25 in any state?

1 A No, I'm not.

2 Q And you agree with me that that's a different  
3 thing from the safety engineering licensing that exists in  
4 Illinois?

5 A As a CSP, you mean, a Certified Safety  
6 Professional?

7 Q Yes.

8 A Yes, they're different, that's right.

9 Q When I think of professional engineer, I  
10 think of, generally speaking, first someone takes the  
11 engineer in training exam. Then after satisfying the work  
12 experience requirement, they sit for professional engineer.  
13 And certain your Master of Science in Chemical Engineering  
14 would be one of those building blocks to that. But I take  
15 it I don't hear you saying you have sat for the exam in any  
16 particular state?

17 A No, I haven't.

18 Q Too busy working?

19 A If we could compare it to physicians, I  
20 suppose I could say I'm board eligible, that would be the  
21 most appropriate designation.

22 Q Is there any other employment that is not  
23 listed on your CV?

24 A No, I think I was employed -- and, in fact,  
25 still am -- at Karmanos Cancer Institute, a research on

1 prostate cancer. That project is winding down.

2 Q That is in there.

3 A That is in there? No, there is nothing else.

4 Q Well, let me -- since you bring that up,  
5 let's explore it just for a few moments. I take it in that  
6 event you were -- what's known in the business as the  
7 principal investigator and you're supervising, as I  
8 understand it, three other people who are investigating some  
9 aspect of that?

10 A Excuse me, I was one of four principal  
11 investigators. There are three other people as well.

12 Q And your role in that was what?

13 A My role was to supervise industrial  
14 hygienists in establishing retrospectively exposures of  
15 people with prostate cancer in controls. Establish an  
16 occupational history for these gentleman over their life.

17 Q And was this the data that would then in turn  
18 be reviewed by other investigators who were physicians?

19 A That will be late in the process. Now the  
20 data are being evaluated by biostatisticians.

21 Q Epidemiologists?

22 A Well, then that would be phase three, the  
23 epidemiologist. And then the last phase would be joint  
24 where we all get back together and look at it along with  
25 physicians, the medical implications of occupations and

1 prostate cancer.

2 Q I've reviewed the publication on your CV. Is  
3 this list complete or do you know -- well, let me let you  
4 look at Exhibit 72, which we don't have before us today,  
5 whether there are additional publications on that?

6 A There might be, say, two or three additional  
7 publications within the University. But beyond that,  
8 nothing.

9 Q Now, again, as a layman, looking at this, I  
10 didn't see anything in list of your publications that dealt  
11 with sulfur dioxide in any respect. Did I miss that?

12 A Well, there wouldn't be anything in the  
13 title. I've written a book and there might be some problems  
14 within that book. As I sit here, I don't know if there are  
15 problems in that book regarding SO2 or not.

16 Q Which book are you talking about?

17 A It's in my CV. It's called "Air Contaminants  
18 and Industrial Hygiene Ventilation."

19 Q Could you take a look and point out which one  
20 to me?

21 A I'm going to have to go through each one, I'm  
22 sorry.

23 Q There is one here that talks about problems?

24 A Page what? I'm sorry.

25 Q Page 8, one is "Problems with Technology and

1 Measurement?"

2 A No, page eight, a little more than halfway  
3 down, "Air Contaminants and Industrial Hygiene Ventilation,  
4 CRC Press."

5 Q Press and Lewis Publishers?

6 A Yes.

7 Q Okay. And what is that book about?

8 A It's a book that contains 450 problems,  
9 solved problems on primarily air contaminants in the  
10 workplace, but air pollution issues as well in the  
11 community, primarily industrial hygiene issues, and problems  
12 regarding ventilation as a control method for those air  
13 contaminants. The example problems are designed to help the  
14 reader address these issues. There are some introductory  
15 chapters on concepts. For the most part it's a workbook of  
16 450 problems.

17 Q And so that might have some sulfur dioxide --

18 A It might.

19 Q -- in it. As we sit here, is that the only  
20 one you could think of in terms of what might otherwise  
21 discuss or focus on sulfur dioxide?

22 A That is the only one. And, of course, in my  
23 reports to Wyandotte Chemicals and Ford Motor, but those  
24 were internal documents. There were several of those. And  
25 for the people I supervise. But other than that, nothing.

39

1 Q Okay. And really I'm just trying to confirm  
2 that I haven't missed something because of my inability to  
3 decode some of this language. But there is nothing related  
4 or focuses on sulfur dioxide with the same type of -- say,  
5 for example, you have written one of things here on  
6 polychlorinated biphenyls, which that probably goes into  
7 whole the PCB thing in great detail. And what I think I'm  
8 hearing is you haven't done a similar work or monograph -- I  
9 love that word -- on sulfur dioxide?

10 A That's right.

11 Q Now notwithstanding that, there is nothing  
12 in there, other than that book of the problems, that  
13 handbook, is there anything else that you have written that  
14 you think is particularly pertinent to the opinions that you  
15 have expressed in your report of this case?

16 A No.

17 Q Now, in your CV it talks about presentations  
18 that you made to hospitals. Based upon what we talked about  
19 before, I'm guessing that that's kind of like what we  
20 discussed earlier where you take a fragment of one of the  
21 courses that you teach and present that narrow topic to  
22 interested groups among these various institutions; is that  
23 fair?

24 A Well, perhaps for half of the presentations I  
25 give to hospitals. Sometimes they are very specific and the

1 subject is -- I won't say esoteric -- but it's beyond the  
2 scope of the courses I teach because of the detail I get  
3 into. The fitting of respirators for nurses and physicians  
4 that might have patients with tuberculosis, it's not  
5 something I cover in the course, but it's so detailed I'd  
6 have to cover it.

7 Q Certainly, certainly. Anything in those  
8 presentations that's germane or otherwise relevant to the  
9 opinions that are expressed in your report, just for  
10 completeness?

11 A No.

12 Q Okay. Before the deposition began, we were  
13 talking about depositions that you have done and you were  
14 kind enough to give us some information regarding the trials  
15 in which you have testified in the last 13 years. Before we  
16 get that information, can you tell me what information you  
17 have started to collect with respect to deposition  
18 testimony?

19 A I've started a file. I believe it's sketchy  
20 because I'm trying to build it on my recall and going  
21 through records and there probably will be omissions. I'm  
22 doing it by at least part of the case caption, by the  
23 attorney that retained me, the nature of the claim, and the  
24 year and the location, generally by city. I believe those  
25 are the things I've started to record and will provide a

1 list. I don't know if it's any more detailed than that.

2 Q I guess that, generally speaking then, when  
3 you do work for attorneys, you're generally in state courts  
4 of some kind?

5 A I have been in federal and state.

6 Q Has this ever come up in the past? Because  
7 as long as I've been around, it's not terribly long, but as  
8 long as I've been around the federal requirement is an  
9 expert witness has to have this -- provide this information  
10 about deposition testimony. Has that ever -- I realize it's  
11 incumbent upon the other side to ask you for it, but nobody  
12 has ever asked you in the past?

13 A No, I first learned about it about two years  
14 ago. Apparently this federal rule has been around for a  
15 long time, but I wasn't aware. I've been asked what percent  
16 of your time and what type of cases, but I wasn't aware  
17 until two years.

18 Q We're going to get that, too.

19 A There is no way I can go back thirty years.

20 Q No one is asking you to. I guess I want to  
21 get a sense, in preview, with the hopes of dispensing of a  
22 telephonic follow-up to this, to learn what I can about your  
23 depositions.

24 A Sure.

25 Q Let me back up a step and just ask you with

1 respect to your work for -- can I call it CRM?

2 A CRM is fine, sure.

3 Q Your company, how would you breakdown the  
4 percentage in terms of consulting that you do on behalf of a  
5 company, say, that wants you to come in and do an audit or  
6 some of type of service for them, as distinct from  
7 consulting services that you perform on behalf of a company  
8 or insurance outfit or a lawyer where you're providing  
9 litigation services as -- you know, in this field?

10 A That is a question that comes up now and  
11 then. I would say 20 to 25 percent of my consulting work is  
12 in the area of serving as an expert on issues such as this.  
13 And 15 to 20 percent would be in the area of teaching and  
14 research. And the balance, roughly 60 percent, would be in  
15 the area of providing industrial hygiene consultation  
16 services to industrial firms, insurance companies,  
17 government agencies, things like that.

18 Q Okay. And I take it from one of the lines in  
19 your report that you get -- you either give a deposition or  
20 testify in a trial about once a month; is that --

21 A I would say -- not at trial, I'm deposed on  
22 average once a month.

23 Q I meant either.

24 A Right. I would say once a month, yes.

25 Q And so what kind of records do you think you

1 have with respect to -- let's talk about the volume first.  
2 Maybe a list of going back two years of 20, 25 depositions  
3 where you have given in the past?

4 A That's about right, I would say.

5 Q Do you have any transcripts of any  
6 depositions that you have been given?

7 A Not as a matter of course. In fact, I'm  
8 rarely given a transcript of my depositions. I don't ask  
9 for it and it's rarely provided to me and I really don't see  
10 a need for it. I'm assuming it's preserved somewhere.

11 Q How about your trial testimony? Do you have  
12 any transcripts of areas where you've testified at trial?

13 A Nothing comes to mind, I mean --

14 Q How many cases would you believe you have  
15 right now that are active? And by that I mean you have  
16 formed a consulting relationship: Some may be in the early  
17 phases where you're viewing material, others may be like  
18 today you're preparing a deposition, others may be hopefully  
19 toward the close of the relationship where you're testifying  
20 at trial next month. How many cases, using that definition  
21 of active, would you consider you have?

22 A I'm visualizing the second desk in my office  
23 because that is where they sit. And I have to go through  
24 how many rows by rows. I would say 15. But having said  
25 that, I might find out that the case settled a long time

1           ago.   So when I learn of that, then I pitch it.   But I would<sup>44</sup>  
2           say about 15.   As far as I can tell, they are active.

3                   Q     And when you provide those kinds of  
4           litigation consultation services, if I may use the phrase,  
5           you're wearing your CRM hat at that time, correct?

6                   A     I don't know if I'm wearing any hat.   I'm me.  
7           I'm giving expert opinions.   Do I bill through CRM?   Is that  
8           what you're getting at?

9                   Q     That's one way to answer.

10                  A     Yes, the checks are payable to Chemical Risk  
11           Management.

12                  Q     So conversely, you're not here on behalf of  
13           or with the stamp of approval of Wayne State University, for  
14           example, although you do a significant amount of work with  
15           them, correct?

16                  A     Right.

17                  Q     And I can see, for example, at the top of  
18           your letter there is a couple of logos, if you will.   The  
19           one piece that says Wayne State University -- and I  
20           understand you probably use that letterhead to send a wide  
21           variety of different correspondence and some may be germane  
22           to Wayne State and some to your CRM work, but in this  
23           particular case one should not be confused into thinking  
24           that Wayne State University has any interest or other role  
25           in this case; is that fair?

1 A That's fair.

2 Q Do you ever testify in criminal matters?

3 A There have been a few, nothing recent.

4 Q What kinds of cases would you get involved in  
5 in a criminal environment?

6 A One was a murder case. And there have been a  
7 few other over the years that have been infractions of EPA  
8 issues where the sanctions are more criminal than civil.

9 Q And when you say EPA infractions, what are we  
10 talking about? Spills or --

11 A That sort of thing, right.

12 Q And in the murder case, what was that about?

13 A Fascinating in that the convicted murderer  
14 was fingered by his Nth wife in some island off Tahiti. He  
15 had be on the lamb for a long period of time. He was  
16 fleeing from all sorts of jurisdictions and he was  
17 prosecuted for poisoning his first wife -- first or second  
18 wife and found guilty.

19 Q What was the agent?

20 A Succinylcholine,  
21 S-U-C-C-I-N-Y-L-C-H-O-L-I-N-E.

22 Q And where does one find that? I won't even  
23 try to pronounce it.

24 A It's not an over-the-counter drug. It's a  
25 muscle relaxant. You could probably get it from a hospital

1 pharmacy, but not your corner drugstore. It's used in  
2 certain medical procedures.

3 Q Is that a Ferrari-type agent?

4 A Yes, it would be, interesting way of looking  
5 at it. The man who is turning big rocks into little rocks  
6 right now was a pharmacologist and he understood that this  
7 chemical broke down quite quickly in the human body and was  
8 essentially non-detectable.

9 Q And what was your role --

10 A I was just trying to think of the television  
11 program, it's still on. Some television show where they  
12 posts criminals.

13 MS. STORM: Unsolved Mysteries.

14 A This guy was a pilot; he was a clown; he was  
15 a carpenter. He was also PhD pharmacologist. He did all  
16 sorts of things. He was an airplane pilot, I believe. Your  
17 question? I'm sorry. Fascinating that, hey, I know that  
18 man.

19 Q Your role in the litigation?

20 A It was a very minor technical role about the  
21 use of a gas chromatograph and a mass spectrometer in  
22 analyzing materials.

23 Q I would imagine that those are staples of  
24 your laboratory?

25 A Not my present laboratory.

1 Q But at Ford?

2 A Yes. There was some debate on the Fry Rule  
3 and that's why I was called into it.

4 Q I'm guessing that you would agree that the  
5 criminals matters that you have been involved in as a  
6 witness have no bearing on the opinions and conclusions that  
7 you have in this case?

8 A No, they don't.

9 Q Now, with respect to the civil matters that  
10 you have testified in -- have you testified in any -- in any  
11 litigation or consulted in any case relating to litigation  
12 that had to do with the inhalation of sulfur dioxide?

13 A Before I get to that, I should back up. I've  
14 been involved now and then on Dram Shop issues where there  
15 have been contests regarding how inebriated the person was  
16 or was not. I assume that would be criminal.

17 Q Where a person is prosecuted for serving  
18 someone who is intoxicated?

19 A And I'm called in as an expert on the most  
20 probable number of beverages consumed, blood alcohol as a  
21 function of time and diet, type drink and when a person had  
22 it -- I don't know if that is criminal or civil -- DUIs,  
23 that sort of thing.

24 Q And I appreciate your -- you have license, if  
25 you remember something in the depo that relates to an

1 earlier question, feel free to supplement your answer. I'm<sup>48</sup>  
2 grateful for that. I'm taking that notwithstanding  
3 remembering about those cases, you still agree that none of  
4 the criminal matters you appeared in as a witness are  
5 relevant to your opinions in this case?

6 A They are not.

7 Q Let's go to the civil matter then. And I was  
8 asking you -- I think the question on the table dealt with  
9 have you ever testified or consulted -- and I don't want to  
10 make it -- limit it to testimony. Have you ever consulted  
11 with someone involving litigation where the facts involved  
12 alleged inhalation of sulfur dioxide?

13 A Nothing comes to mind. I would like to think  
14 I'd remember that, but nothing comes to mind.

15 Q Looking at the list that you provided -- and  
16 again, this is just -- the list you gave us to this point is  
17 just trials, correct? Trial testimony?

18 A Yes.

19 Q I didn't see anything on this list that stuck  
20 out to me as sulfur dioxide related. Am I right in that or  
21 did I miss something?

22 A No, you didn't.

23 Q Let me ask you a couple of the abbreviations  
24 on this list. OBS, can you tell me what that is in the  
25 reference to occupational asthma and OBS.

1 A Organic Brain Syndrome.

2 Q And solvent vapor induced RADS?

3 A Reactive airways dysfunction syndrome.

4 Q Okay. Have you ever been retained by

5 Ms. Storm in the past?

6 A No.

7 Q Have you ever retained by a member of her

8 firm?

9 A No.

10 Q Have you ever been involved in litigation  
11 where Ms. Storm or another member of her firm represented a  
12 party other than one that called you, but you worked  
13 together on the case?

14 A No.

15 Q When were you retained in this case?

16 A I can't give you a specific date, I'm sorry,  
17 I could check with Expert Resources. As I sit here, I don't  
18 know the date. I'd be guessing.

19 Q What is Expert Resources?

20 A They are an agency in Illinois that provides  
21 litigation assistance, experts I suppose, in any matter to  
22 those who need expertise.

23 Q And was that your first contact regarding  
24 this case was an inquiry that reached you from Expert  
25 Resources?

50

1 A Yes.

2 Q And is that an organization that you -- I may  
3 not be using the right words -- you register with them for a  
4 particular, say, I'm available in these particular fields.  
5 And if they have someone that needs an expert in those  
6 particular fields, they call you up and find out if you're  
7 interested in looking at the case?

8 A Yes.

9 Q How long have you been affiliated with Expert  
10 Resources?

11 A Perhaps 10, 12 years, maybe more.

12 Q Pretty much going back to the creation of  
13 CRM?

14 A Perhaps, I'm not -- I really can't give you a  
15 specific date, but it's certainly ten years.

16 Q Are you affiliated with any other agencies or  
17 companies like Expert Resources, but perhaps in another  
18 state or another discipline?

19 A There are two. Technical Advisory Service  
20 for Attorneys in Pennsylvania and there is another one also  
21 in the same city, Blue Bell, Pennsylvania, Technical Network  
22 Services, I believe, is the name of the organization.

23 Q Do you keep a record of the time spent on a  
24 particular case?

25 A Not -- well, yes, I do. There are billing

1 statements in this case that go to Expert Resources, right.<sup>51</sup>

2 Q Let me make sure I understand. You fill out  
3 an invoice that says a date and an activity, looked at this  
4 information, and you tell them how many hours, and then you  
5 multiply that by whatever hourly rate you charge, and then  
6 everything gets totalled up and that's your bill or invoice?

7 A That's right.

8 Q And those, in this case, you are sending to  
9 Expert Resources?

10 A Yes.

11 Q Can you tell me what your rate is?

12 A There are two rates. Two hundred dollars per  
13 hour for all work that I do on the case with the exception  
14 of depositions and trial and that is \$300 per hour and  
15 expenses at cost. Expert Resources, of course, adds their  
16 administrative charge or markup or whatever that is.

17 Q And what rates do you charge if say an  
18 attorney down the street in Dearborn, Michigan, knocked on  
19 your door and came in through the door and said, "I need  
20 your help, I've got this case that involves some benzine and  
21 I don't know what I'm doing and I need your help with the  
22 science aspect," what rate does that person get charged?

23 A The same rate.

24 Q And --

25 A I should say the way you describe that

1 scenario, I might invest two, three or four hours into  
2 something for which there is no charge, sort of a pro bono  
3 thing. If it's a non-issue, I let it go at that.

4 Q Essentially, you are doing that to see  
5 whether the activity or whatever happened warrants further  
6 inquiry?

7 A Exactly.

8 Q Do you know how much you have billed Expert  
9 Resources to date?

10 A Not offhand, no.

11 Q Well, do you know how much you billed prior  
12 to October 27, 2001, when you issued your report?

13 A I'd be guessing. They are in my records. I  
14 don't know as I sit here.

15 Q Can you give me a ball park of the number of  
16 hours you anticipated were spent prior -- from whatever time  
17 you got retained until October 27, 2001, when you issued  
18 this report, how many hours you spent on the -- on  
19 formulating it?

20 A It's an absolute guess, I want the record to  
21 reflect that, 15 hours. It could be 20, it could be ten. I  
22 don't know.

23 Q And that helps me with that. Really, what  
24 I'm interested in is are we talking about -- and you'll  
25 satisfy my interest at this point with an understanding of

53  
1 the order of magnitude. I don't know if we're talking about  
2 tens or a hundred or 500. But if I say it's between ten and  
3 10 hours and you're comfortable with that range, not holding  
4 you to a specific number?

5 A Yes, that's right.

6 Q Thank you. And how much time -- again, you  
7 give me the range. I'm not here to put the numbers in your  
8 mouth. You give me a range for the number of hours that you  
9 spent after this report was complete until the present.

10 A Well, short of today and yesterday, I  
11 reviewed the file for half of an hour about three nights  
12 ago.

13 Q And that's it?

14 A That's it.

15 Q All right. And I take it that your activity  
16 three nights ago was to brush up on this for the deposition?

17 A That's right.

18 Q And when you reviewed the file, as you say,  
19 what did you review?

20 A Pretty much everything in front of me.

21 Q All right.

22 A I have to admit, this is not my complete  
23 file. I'm in the process of consolidating three offices  
24 into two and there are some records that I just didn't  
25 retrieve for today's meeting.

1 MR. SCOTT: Scott, are you going to mark the  
2 file -- off the record.

3 (Off-the-record discussion.)

4 BY MR. THOMAS

5 Q Sir, if you would, tell me your understanding  
6 of what happened on March 17, 1999, with respect to this  
7 case.

8 A I guess who, what, why, when and where,  
9 right? On March 17, 1999, Mr. Rick Newman, an employee of  
10 Vi ox, was in Building 179 at the Procter & Gamble Ivorydale  
11 Plant. He was in the process of insulating a piece of  
12 equipment, mechanical equipment. It was later in the  
13 afternoon, approximately 3:30 as I recall, thereabouts --  
14 I'm not sure of the time, pardon me. I'm not sure of the  
15 time. And the records reflect that there was a release of  
16 liquid sulfur dioxide, which rapidly vaporized and  
17 intruded into his workstation. He was exposed to sulfur  
18 dioxide gas for an undetermined amount of time. And,  
19 subsequently, he was diagnosed with chemical pneumonitis.  
20 And I guess that's why we're here today.

21 Q You used the word "rapidly" in terms of the  
22 liquid sulfur dioxide, what are we talking about there?

23 A Well, liquid SO<sub>2</sub>, the boiling point is about  
24 14 degrees. It's very low. It has significant vapor  
25 pressure on the order of about 2300 millimeters of mercury.

1           So liquified SO2 will flash rather quickly. It can vaporize<sup>55</sup>  
2           rapidly at room temperature.

3                   Q     So to a layman, me, what I hear you saying is  
4           that when you have liquid SO2 and you allow it to expand in  
5           a container, it will go to a gas at temperatures of, I  
6           think -- normal temperatures about 14 degrees, we're talking  
7           about Fahrenheit, I guess?

8                   A     Well, even lower than that. You'd have to  
9           get down to absolute zero where it wouldn't vaporize at all.  
10          As the temperature increases, the rate of vaporization  
11          increases.

12                  Q     So when you said 14 degrees, that is the  
13          boiling point at which there is a quantity of sulfur  
14          dioxide. It's going to go to a gas (indicating) fairly  
15          quickly -- I snapped my fingers.

16                  A     In an open system where there are no pressure  
17          constraints and temperature constraints, yes. Within the  
18          system that it's contained, there would be a two-phase, a  
19          liquid and a gas phase.

20                  Q     You also said there was an exposure for an  
21          undetermined amount of time. I thought I read in your  
22          report that there was an exposure for one to two minutes?

23                  A     That is my belief. It's the most likely  
24          exposure time of Mr. Newman. I don't know that. I suspect  
25          nobody has an exact precise duration of exposure.

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1 Q Okay. But if you would, tell me what facts  
2 lead you to that belief that it was one to two minutes?

3 A It really is a reflection of my experience  
4 with studying dozens and dozens of work sites and hundreds  
5 of workers exposed to SO<sub>2</sub> under a variety of conditions.  
6 I've found situations where workers are not exposed to  
7 anything above the ambient concentration of SO<sub>2</sub> and  
8 situations where there has been a gross overexposure and a  
9 variety of physiologic responses to those exposures. And  
10 they can be quite variable. One thing about sulfur dioxide  
11 is that the six people in this room exposed to the same  
12 concentration more likely than not would have extreme,  
13 depending on the dose of course and dose response or dose  
14 rate, considerably different reactions. Some might not be  
15 so affected as others. For whatever reason, it's a  
16 peculiarity of sulfur dioxide that I have not seen with  
17 other gasses with the exception of ammonia. But based on my  
18 review of the records that were provided to me and my  
19 interview with Mr. Newman, I believe that he was exposed for  
20 at least a minute and perhaps longer.

21 My review, I should say, of an interview of  
22 Mr. Newman is that I believe there was a time he didn't  
23 recognize he was being exposed and that is not at all  
24 surprising with sulfur dioxide. I would like to temper  
25 those remarks and say, for example, this room was suddenly

1 inundated with one percent sulfur dioxide gas at ten  
2 thousand parts per million. All of us would respond the  
3 same way. But there are lower concentrations of the gas  
4 where there is a variability in human response.

5 Q It's my understanding that the gas sulfur  
6 dioxide is detectable to the human nose at a concentration  
7 of 0.33 parts per million, according to that organization  
8 that I think is the American Industrial Hygiene Association;  
9 is that right?

10 A I'm a member of that organization and have  
11 been for 35 years or so or -- I don't know, since '68.  
12 There is a range of responses of the human nostril to sulfur  
13 dioxide and they are sorted out into two categories. One,  
14 detection. And, two, recognition. The range for detection,  
15 for example, is I notice something in the atmosphere, I have  
16 no idea what it is, but I'm being affected by it. Where  
17 recognition is not only am I affected by it, but more likely  
18 than not it's this or that. It's a clear demarcation  
19 between -- there is a thing between -- there is a link  
20 between what the person perceives and what the agent is. So  
21 there are two sets of values given as a range by the  
22 American Industrial Hygiene Association.

23 Q And detection, that is that first experience  
24 that you talked about, "I smell this odor, I'm not sure I  
25 recognize it;" that is 0.33 parts per million, correct?

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1           A     The range for sulfur dioxide for detection is  
2     .33 per five parts per million and the range for recognition  
3     is 3.8 to 5.0. And there are geometric means, that is  
4     50 percent above and below of 2.7 and 4.4 parts per million  
5     respectively. You could say with sulfur dioxide it -- well,  
6     it has an odor. I think it's probably more appropriate to  
7     refer to it as an irritating quality with an odor that could  
8     be different from one person to the next. I've had workers  
9     describe the odors in different terms. Smells like -- well,  
10    John smells like this and Bob smells it like that.

11           Q     And both John and Bob agree it smells very  
12    bad, don't they?

13           A     It depends on the concentration. It depends  
14    on a lot of things. If they are like me, I can't smell it  
15    anymore since by surgery. Sadly, I lost all my sense of  
16    smell.

17           Q     With respect to these numbers, tell me what  
18    you're reading from?

19           A     I'm reading from the American Industrial  
20    Hygiene Association's publication entitled, "Odor Thresholds  
21    for Chemicals with Established Occupational Health  
22    Standards."

23           Q     And the date of that?

24           A     1989. There might a more current edition,  
25    but this is 1989.

1 Q Have you ever smelled sulfur dioxide?

2 A Many times, yes.

3 Q And at what concentration have you smelled  
4 it?

5 A It's difficult to do that in the field. The  
6 studies that are reported here are controlled studies in  
7 laboratory settings. The reason I say that, the research  
8 olfaction physiologists can prepare a known concentration in  
9 a controlled environment and can ask the people to sniff it  
10 and detect certain things. When I've been in the field  
11 taking air samples and measuring ventilation for worker's  
12 exposures, my air sampling device might run for anywhere  
13 between five and 25 or 30 minutes, so I get an average  
14 result during that period. And during that time it wouldn't  
15 at all be unusual for the gas concentration to fluctuate.  
16 It's a long winded way of saying I get an average number and  
17 during that time frame I might or might not smell it. So I  
18 can't give you a snapshot, a pinpoint time of concentration.  
19 Having said that, I can detect and clearly recognize SO<sub>2</sub> at  
20 about eight to 12 parts per million.

21 Q And please don't confuse my question. I'm  
22 not -- it's not your fault, it's my fault for not being  
23 clear. I'm not asking you at what concentration you were  
24 able to detect the odor, the pungent odor of sulfur dioxide.  
25 I asked you a question and you said that you smelled sulfur

1 dioxide on a variety of occasions. Tell me about the  
2 concentration levels at which you have smelled that gas?

3 A Well, I don't know all of them. There was a  
4 release at a foundry, a Ford foundry in Windsor, a massive  
5 release. I didn't take an air sample. I would expect the  
6 concentration was several hundred parts per million. I  
7 don't know. I was evacuating the area. Had I taken an air  
8 sample, I wouldn't be surprised if I was getting several  
9 hundred ppm's of SO<sub>2</sub> gas, but that is a guess. I have  
10 detected it as an average concentration over say a 15 minute  
11 air sample period clearly at five parts per million, maybe  
12 closer to eight, but it's quite variable. I think I have a  
13 higher threshold for detection and recognition than other  
14 people do, that's been my experience. And I find the same  
15 with ammonia gas as well.

16 Q Is it fair to say that the phenomena of  
17 desensitization through chronic exposure to a particular  
18 smell or to sulfur dioxide in particular, that say might be  
19 common in workers at a foundry, that's not something that  
20 would affect Mr. Newman's ability to smell this gas on  
21 March 17, 1999?

22 A Correct, that would be very speculative on my  
23 part to speak to what he would or would not have responded  
24 to. Clearly, desensitization or olfactory fatigue, these  
25 things do occur with many gasses, not all.

1 Q What I'm saying is you're unaware of any  
2 facts where Mr. Newman was exposed to sulfur dioxide over  
3 the course of many days, months, weeks, which would result  
4 in his being desensitized through chronic exposure?

5 A I'm not, no.

6 Q So you agree with me?

7 A I agree.

8 Q That's all I was asking.

9 A Sure.

10 Q All right. Let's talk for a few minutes  
11 about the materials that you reviewed. And I'm looking on  
12 the first page of your report. You can look at that and  
13 follow along with me. There is a paragraph that begins, "I  
14 studied numerous documents and records." Is this a complete  
15 list of the materials that you looked at prior to issuing  
16 your October 27 letter?

17 A I received additional records since then, not  
18 many, but some. That would be a complete list, yes.

19 Q What would be the additional records?

20 A The report of Mr. Kaminski, I believe. Dr.  
21 Hirsh's deposition. I mean. I really have to go to the  
22 transmittal letter from Mrs. Storm to specifically identify  
23 them and I don't have that handy. But there was a letter to  
24 me from her in February, I believe maybe a couple of  
25 letters, that had additional documents included with them.

1 Q Just so your answer is complete, let me give<sup>62</sup>  
2 you that letter.

3 A Yes, these would be the reports I mentioned.  
4 Mr. Kami ni ski , Mr. Kapi chi , and Drs. Donovan, Goyl e and  
5 Brownstei n.

6 Q And did you review those?

7 A Yes.

8 Q And let me just -- I'll get to it in detail  
9 if we need to. Did your review of any of those materials  
10 cause you to, as I think you say, you reserve the right in  
11 your letter -- you "reserve the right to augment, modify  
12 recant or buttress these opinions if additional evidence or  
13 facts are shared with you." Do you need to do any of those  
14 things on the basis of the additional information that you  
15 have received?

16 A No.

17 Q Tell me what -- well, before we get to that.  
18 Let me -- have you reviewed any pleadings in this case,  
19 legal papers that anyone has filed?

20 A Well, there were responses to  
21 interrogatories; that is not really a pleading. No, I can't  
22 say I have.

23 Q You've already told us about those. You told  
24 us about those?

25 MS. STORM: In the interest of making a correct

1 record, he was mailed a copy of the complaint. I'm not sure<sup>63</sup>  
2 what pleadings.

3 Q He's recorded that he looked at the  
4 complaint, thank you.

5 MS. STORM: Okay.

6 Q Have you met Mr. Newman?

7 A No.

8 Q Have you talked to him on the telephone?

9 A Yes.

10 Q Or had correspondence with him?

11 A Telephonically.

12 Q And when did you talk to him on the  
13 telephone?

14 A Perhaps in March sometime and yesterday.

15 Q March of?

16 A This year.

17 Q 2002?

18 A Again, I don't have the specific dates.

19 Q That's fine. But is it fair to say it's a  
20 couple months ago and after your October 27, 2001, report?

21 A Yes.

22 Q And what did Mr. Newman tell you?

23 A I wanted him to describe his working  
24 conditions on March 17, 1999. I had read the records, the  
25 documents that have been provided and I wanted to hear in

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1 his words what he was doing and how he was doing it. I  
2 didn't take notes. I can't recall what he told me. I could  
3 say this, there was nothing that came from that telephone  
4 conversation that flew in the face of my understanding. And  
5 I was looking for that, but I didn't encounter that.

6 Q Okay. So what I think I hear you saying is  
7 you had a conversation on the telephone with Mr. Newman and  
8 what he told you didn't cause you -- didn't disrupt the  
9 facts that you thought you gleaned from the written  
10 materials that you had reviewed prior to that point?

11 A Right. I had confusion about the  
12 configuration of Building 179. And I understand there is  
13 some dispute about where he claims he was working and where  
14 others claimed he was working. But setting that aside, I  
15 had some concern about the actual structural arrangements of  
16 the building. And I spoke to Mr. Newman about that  
17 yesterday and then inspected the building this morning,  
18 which clarified some issues for me.

19 Q What was your understanding prior to the  
20 telephone call with Mr. Newman?

21 A Prior to all this, I had a difficult time  
22 sorting out the various -- there was a photocopy of a  
23 photograph of the building, exterior of the building. There  
24 was a floor plan and they didn't gel. They didn't -- there  
25 were some new structural elements included. And I came to

1 I learn that what was present when he was exposed to sulfur  
2 dioxide was not the same as in the photograph that I had  
3 been provided. And I had a question about a wall that he  
4 described as being approximately 10 feet long and 6 feet  
5 high adjacent to where he was insulating the tank, I was  
6 interested in that. And it became clear what he was talking  
7 about.

8 Q Okay. How long was your conversation with  
9 Mr. Newman?

10 A I really can't say. Not very long, it was  
11 very brief.

12 Q First off, there are two conversations. One  
13 in March and one yesterday?

14 A Right.

15 Q Was the one in March, are we talking about an  
16 hour?

17 A No, no, nothing like that, very brief.

18 Q Less than 15 minutes?

19 A Yes.

20 Q The conversation yesterday, an hour?

21 A No, no, I would say less than 15 minutes.

22 Q And tell me what the features were -- to use  
23 the word that didn't "gel" between the architectural or  
24 building features?

25 MS. STORM: Can we have the file back?

66

1 MR. SCOTT: The photograph is in there.

2 MS. STORM: That may be all I need. Excuse me for  
3 interrupting, Scott.

4 Q No, that is all right. You can look at any  
5 photographs you like to compare.

6 MS. STORM: Thank you.

7 Q But tell me what wasn't jiving.

8 A There were several things. I was trying to  
9 really marry this floor plan with this photograph.

10 MS. STORM: Identify them.

11 A One is PG-4 Exhibit and other doesn't have an  
12 exhibit.

13 Q It is page 40 of the exhibit book, which that  
14 will clarify which Exhibit No. it is from.

15 A For one, on the side of the building there  
16 appears to be an enclosure that I cannot, in as many plans  
17 as I've looked at throughout my career, decipher on this  
18 floor plan. And I wanted some clarification on that. There  
19 was a description here, it states, a metal wall, which I  
20 presume to be along at this point. I wouldn't describe it  
21 on PG-4, but essentially at the side of two roughly garage  
22 size doors, utility doors on Building B. And it appears  
23 this wall is what is demarked as a metal wall here. But  
24 then there is Building A. I don't see a Building A as such.  
25 I see air compressors, mechanical equipment, but no Building

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1 A. I was confused about that. But there is an additional  
2 buildings, like a sub-building on top of Building A which  
3 does not appear to be on this floor plan.

4 Q When you're saying the additional building,  
5 you're talking about the structure at the extreme left of  
6 the photograph that is a copy on page two?

7 A Yes.

8 Q Do you have it clear in your head now what  
9 the layout was and the photograph depicts after having  
10 talked with Mr. Newman yesterday and visiting that site this  
11 morning?

12 A It appears that this is no longer there. And  
13 at the time Mr. Newman was working in Building B, Building A  
14 was not present. It was -- perhaps some of the equipment  
15 was present that the Mesa employees were working on, but it  
16 was enshrouded in a plastic three-sided envelope, for lack  
17 of a better term, instead of a structural building such as  
18 this.

19 Q And to what extent, if any, does that require  
20 you to augment, modify, recant or buttress the opinions in  
21 your report?

22 A It really doesn't.

23 Q Okay. So it was something that was nagging  
24 at you because you didn't feel that you understood it fully.  
25 But now having understood it fully, you don't feel it makes

1 any -- it doesn't really bear on any of the opinions that  
2 you have?

3 A No, the enclosure today is of more  
4 substantial material than was present three years ago.

5 Q Okay. And what else did Mr. Newman tell you  
6 in his telephone conversation with you yesterday?

7 A Well, I should mention that it was also a  
8 conference call where Mrs. Storm and I were present and she  
9 had questions of Mr. Newman as well, so it wasn't just my  
10 dialogue with him. It was a three-way.

11 Q Let me just ask you what questions that you  
12 asked to Mr. Newman that he responded to you, or anything  
13 that Mr. Newman said that you found germane to the opinions  
14 and conclusions that you made in this case?

15 A I asked him to describe the wall that was  
16 adjacent to where he stated he was working that day. And  
17 you can see from the diagram, it's not clear if this is a  
18 solid wall that goes to the ceiling or if it's a partial.  
19 He explained to me it was approximately 10 feet long and  
20 6 feet high. He described it as cinder block, when in fact  
21 it is not cinder block; that is neither here nor there as  
22 far as I'm concerned, it is a solid wall. I had some  
23 questions about that. I asked him to explain to me again  
24 how long he believes that he was exposed to sulfur dioxide  
25 and he couldn't be precise on that. Because I, frankly,

1 don't think he knew. I think early on he was exposed, but<sup>69</sup>  
2 didn't respond to it until the concentrations became  
3 oppressive.

4 Q Let me take a stop here and this has already  
5 been marked as an exhibit, but I'm going to mark it as  
6 another exhibit so that you can write on it and we can mark  
7 it and you can help me understand and record exactly what it  
8 is that you're describing by writing on the document. If we  
9 need to, we can write on several copies of it. This will be  
10 Exhibit 73.

11 MS. STORM: Do we know what 73 is? Just tell me  
12 what it is. It's an exhibit that's been already marked, but  
13 can you identify it.

14 MR. THOMAS: I'll just say it's a floor plan.

15 MS. STORM: Prepared by who and from what date.

16 MR. THOMAS: Let me just use it.

17 MS. STORM: You know, just tell me, if you don't  
18 know, you don't know. We'll use it preliminarily to finding  
19 out what it is. Do you know who prepared this?

20 MR. THOMAS: I don't know when it was prepared.  
21 It was provided to me and it represents the floor plan. And  
22 I'm not asking you to waive any rights to objecting to it  
23 with respect to the accuracy, its scale, or its depictions,  
24 but I want to simply use it as a means of recording the  
25 witness' discussion of where things are and what --

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1 Q And I'll say this, Mr. Wabeke. If at any  
2 time, you have been there now, if you think there is  
3 something that isn't here that you need to depict, that is  
4 why we're here. You have a pen and we'll put it right on  
5 there and you can adjust it however you want.

6 MS. STORM: If you want me to send him out of the  
7 room, but the problem I have with this is -- like we were  
8 out there today. This is not what it looked like the day of  
9 the accident. I don't know what it is you're going to be  
10 asking him. If you will give me a standing --

11 MR. THOMAS: You have --

12 MS. STORM: Standing objection, motion to strike,  
13 whatever. Again, one of the things that was difficult about  
14 this picture is it wasn't accurate in terms of what it was  
15 when this happened. And I don't believe this is either  
16 unless you can tell me that this was the floor plan on the  
17 date of the accident with the correct features.

18 MR. THOMAS: Well, we'll leave that discussion to  
19 another day.

20 MS. STORM: Okay.

21 Q Have you got Exhibit 73 there in front of  
22 you, sir?

23 A Yes.

24 Q And do you have a pen you can write with?  
25 Feel free to mark this up. Before we started talking, let

1 me get this --

2 MS. STORM: This is part of the file. I'm going  
3 to put it back in front of him. These are his copies of  
4 exhibits. This is part of his file and this is part of his  
5 file and this is part of his file and this one you marked  
6 73. Thank you. Go ahead.

7 Q A few minutes ago we were talking about a  
8 wall. And we were looking at a different layout. And I'll  
9 just represent to you that this diagram is styled as the  
10 first floor at Building 179 and it's divided into section A  
11 B and C or Buildings A, B and C?

12 MS. STORM: Again, are you telling me that you do  
13 not know what the date of this floor plan is?

14 MR. THOMAS: I'm not testifying at this  
15 deposition. I'm just providing this with him --

16 MS. STORM: But you have identified him, but you  
17 have not identified it in an accurate manner. That is the  
18 problem I have. Is this the floor plan of 11/21/01 the date  
19 down at the bottom?

20 MR. THOMAS: Let me do it this way. You know, I'm  
21 either going to examine him over this, which I think will go  
22 a lot faster, or I'm going to give him a blank piece of  
23 paper and he can draw whatever he wants. But I think going  
24 over this is fine. I've allowed you the opportunity, you  
25 can raise whatever objections you like, but I think this

1 helps clarify the examination and preserve his views.

2 MS. STORM: I'm not telling you how to examine  
3 him. I'm asking a question. If you don't know, you don't  
4 know; that will help me. Do you know what the date of this  
5 is?

6 MR. THOMAS: How about I say I don't know?

7 MS. STORM: Then that is all we need to say. So  
8 you're not representing to this witness it is accurate as of  
9 the date of the accident? You're using it for demonstrative  
10 purposes to ask questions?

11 MR. THOMAS: That will work for me.

12 MS. STORM: Thank you.

13 Q Let me start this way. You have been there  
14 today. Does this diagram, which we've marked as 73, without  
15 commenting on the -- without asking you to comment on  
16 whether the figures representing dimensions are precise,  
17 does it reflect the layout that you observed at the site  
18 today?

19 A Generally, with one exception.

20 Q All right. Tell me what the exception is and  
21 I'm going to ask you to take your pen and -- well, first,  
22 tell me what it is, and then we will decide how to reflect  
23 it.

24 A I think it's an important exception because  
25 today I observed the wall described to me by Mr. Newman.

1 His recollection was the wall was approximately 10 feet long<sup>73</sup>  
2 and 6 feet high. And I believe he was referring to this  
3 wall which was present today.

4 MS. STORM: You need to identify that.

5 A On Exhibit PG-4, which was present today in  
6 that location. It's not present here, but I believe that's  
7 significant because Mr. Newman said he was working next to  
8 that wall. And I would find it hard to understand if others  
9 claim he was working down here, how he could make a  
10 connection between that wall and where he was working  
11 because there is no wall there, apparently.

12 Q Please take your pen and transpose the wall  
13 that you've indicated on PG-4 on Exhibit PG-73?

14 A Well, I'm going to transpose it  
15 approximately.

16 Q I'm not holding you to scale.

17 A Approximately there.

18 Q Now, if you would, at the bottom margin, just  
19 so when we photocopy this, we will be able to see, draw an  
20 arrow to that and put a "W" for wall or just spell it out.  
21 All right. And you have written the dimensions 6 feet by  
22 10 feet; is that correct?

23 A Yeah, approximately equal to, yes.

24 Q And the ceiling in the area where that wall  
25 is is about 16 feet high, right?

1 A I would say 16 to 18 feet. I didn't measure  
2 it, but that is a standard height.

3 Q And so is the -- which dimension is the  
4 height of the wall?

5 A Six feet.

6 Q And it's 10 feet long?

7 A Roughly. I didn't measure it, but I would  
8 approximate it like that.

9 Q And Mr. Newman told you on the telephone  
10 yesterday that he was near what?

11 A Near a cement or cinder block wall of those  
12 approximate dimensions at that location.

13 Q And you're assuming that based upon what  
14 Mr. Newman told you on the telephone and the visit that you  
15 made to the site today -- we keep talking about today and  
16 yesterday. Let me just note that today is May 9, right?

17 A Yes.

18 Q May 9, 2002. Please put in an "N" where  
19 you're assuming Mr. Newman was during this event.

20 A It would be approximately here. I can't --  
21 obviously, he's not going to be stationary, he's moving, but  
22 it's approximately where that "N" is.

23 Q And I take it you have -- have you been  
24 provided with any examinations of Mr. Newman, any kind of  
25 medical examinations other than the reports?

1           A     I read the reports. I don't recall seeing  
2     medical records, perhaps I did and don't have them with me:  
3     The exposure reports, incident reports and EMS and that sort  
4     of thing.

5           Q     Well, in your report you state, "I studied  
6     numerous documents and records in connection with my review.  
7     These included medical records and reports." That is the  
8     end of the quote. Does that refresh your memory as to  
9     whether you looked at actual medical records or whether you  
10    reviewed, for example, Dr. Anderson's or Dr. Hirsh's report?

11          A     I clearly reviewed their narrative reports.  
12    I don't recall, as I sit here today, pulmonary function  
13    tests and graphs. Perhaps I did, but nothing comes to mind  
14    as I sit here. It wouldn't surprise me. On the other hand,  
15    I can't state specifically whether I did or didn't.

16          Q     As we sit here today, you're not here to  
17    offer medical opinions, correct?

18          A     No, of course not.

19          Q     Have any -- are there any other changes that  
20    you feel are necessary to make -- to clarify what we talked  
21    about before about things not jiving?

22          A     Well, one thing that doesn't jive that is on  
23    this photograph, or this copy of a photograph, it shows  
24    again this vestibule-like building attached to Building A,  
25    which is not reflected on whatever this exhibit is.

1 MS. STORM: 73.

2 A 73.

3 Q Do you think there is any relevance to the  
4 existence of that vestibule to a full, comprehensive  
5 analysis of what happened on March 17?

6 A I don't mean to be evasive. It might or  
7 might not. I don't know. It strikes me as strange, I'm  
8 looking at three documents and there are common things, but  
9 there are so many uncommon issues it raises some questions.  
10 If, for example, I found out what the purpose of this  
11 structure was, what it housed, if anything, that might have  
12 a bearing on this. It's not going to change my fundamental  
13 opinion. It strikes me as odd at this point in these  
14 deliberations we have this confusion about the documents and  
15 what's purporting to be the truth and undated documents, not  
16 nothing what existed at what time, at least to my way of  
17 liking.

18 Q All right. So with respect to medical  
19 records you don't remember if and what you reviewed in that  
20 regard?

21 A No, I don't; I'm sorry.

22 Q How about material safety data sheets?

23 A There was an MSDS -- in fact, it is in this  
24 stack of documents for sulfur dioxide.

25 Q Can you please show it to me?

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1 A Well, Murphy's Law, I have to go through them  
2 one by one; I'm sorry.

3 Q I'm going to mark that as something for me to  
4 come back to and you can look for that in the break.

5 A Maybe I can answer some questions as you're  
6 speaking. I can respond to your questions while I'm looking  
7 for it.

8 Q What treatises in your library did you look  
9 at?

10 A A NIOSH publication on the physical, chemical  
11 and toxicological properties of air contaminants. I have  
12 the book with me, if you would like. Another NIOSH  
13 publication entitled, "A Guide to the Work-Relatedness of  
14 Disease. The American Industrial Hygiene Association Odor  
15 Detection and Odor Recognition Values that I referred to  
16 earlier. Franck's, F-R-A-N-C-K-'-S Toxicological  
17 Emergencies.

18 Q Could I see the copy of the first one?

19 A Sure.

20 Q And what did you learn from these treatises  
21 that contribute to the opinions and conclusions?

22 A I didn't learn anything from this  
23 publication. I generally have that available because  
24 questions might arise regarding physical and chemical  
25 properties of various materials. For example, you wanted

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1 information regarding the vapor pressure of sulfur dioxide  
2 and I would have an information source.

3 Q How about the other treatises you mentioned,  
4 Franck's and other work-relatedness of disease?

5 A There was nothing enlightening in Franck's,  
6 nothing enlightening in the Guide of Work-Relatedness  
7 Disease.

8 Q They were reference materials you consider  
9 authoritative and you go to them from time to time to get  
10 information that -- you don't keep vapor pressures figures  
11 in your head, for example. But in terms of -- there is  
12 nothing in your report that hinges on a fact or opinion  
13 expressed in one of those treatises; is that fair?

14 A No, it's not entirely fair because I believe  
15 an attachment of my report issues the NIOSH publication, A  
16 Guide to the Work-Relatedness Disease. I cite it in my  
17 report.

18 Q You're talking about the protocol?

19 A Yes.

20 Q We'll talk about that a little bit later.  
21 But other than that, you will agree with me?

22 A Yes.

23 Q What about medical and industrial hygiene  
24 articles from MEDLINE -- is that an internet resource?

25 A Yes, it's an internet resource. I don't

79  
1 recall what I searched on it. What I have in this stack of  
2 documents are some OSHA publications regarding  
3 multi-employer work sites. And I believe I anticipated that  
4 might be an area of contention, so I made photocopies of  
5 those and brought them to today's meeting. Mrs. Storm has  
6 not seen them. She saw them yesterday. They weren't part  
7 of my report. I simply brought them should questions arise  
8 regarding multi-employer work sites.

9 Q You don't intend to offer legal opinions as  
10 to OSHA requirements of and impacts on liabilities in this  
11 case, correct?

12 A No, I'm not a lawyer, but it's background  
13 information I thought might be helpful.

14 Q Is that something you got off MEDLINE?

15 A No, no, not MEDLINE. Google, one of the  
16 search engines; I'm sorry.

17 Q As we sit here today, can you remember  
18 anything from MEDLINE that impacts on --

19 A I have information on the toxicology of SO2  
20 in terms of exposures, but -- I don't know if that was  
21 through MEDLINE or not, I really can't say.

22 Q How about TOXLINE?

23 A Same thing, I can't --

24 Q Grateful Med?

25 A Grateful Med is -- it's not the Grateful Dead,

1 it's a subdivision of MEDLINE and TOXLINE.

2 Q And the National Library of Medicine, I  
3 presume that was also online?

4 A Yes.

5 Q I guess what I'm getting at or I guess the  
6 impression I'm getting is that you've got a case, it  
7 involves sulfur dioxide, and you've dealt with sulfur  
8 dioxide in the past, but it's not something that one keeps  
9 shelves in their study filled with books and treatises on,  
10 so you refreshed your memories of this substance by going  
11 online and using the internet as a resource and looking at  
12 various -- and I guess we're talking about information that  
13 was largely in the form of abstracts?

14 A Right.

15 Q Just to get the background and get the juices  
16 flowing, if you will, about what was going on or what is  
17 important in sulfur dioxide; is that fair?

18 A That's fair.

19 Q Now, the next thing you said in the list of  
20 things that you looked at was diagrams of Mr. Newman's  
21 workstation on the day of his exposure to sulfur dioxide  
22 gas. What diagrams are those?

23 A It would have been PG-4.

24 Q Now, PG-4 is a copy of a pleading that is not  
25 the complaint. Do you know whether you got the entire

1 pleading or whether you just got that page or whether you  
2 got a piece masked out or whether you got it in some other  
3 form?

4 A I don't know.

5 Q Is there any other diagram -- this PG-4 that  
6 you have been referring to, that was something in your  
7 files, correct?

8 A Yes.

9 Q And PG-4 was so marked at an earlier  
10 deposition in this case earlier this year. Do you know  
11 whether you got it sometime in the last couple of months or  
12 is there another diagram in your files that you might have  
13 been able to refer to prior to October 27, 2001?

14 A I received -- I'm almost certain I received  
15 this after I prepared my report. Having said that, I don't  
16 think it was a new diagram. I recall referring to diagrams  
17 not in the stack of documents prior to preparing my report.

18 Q And that's exactly my point. You couldn't  
19 have seen PG-4 in that form?

20 A Not an as an exhibit, right.

21 Q In those days because it wasn't marked prior  
22 to October 27?

23 A Yes. Thank you. In the Plaintiffs answers  
24 to interrogatories is this very diagram. Ms. Storm  
25 refreshed my memory on that.

1 Q So what you had is a copy of that diagram in <sup>82</sup>  
2 response to Mr. Newman's response to interrogatories; that  
3 is the form you saw it in?

4 A Yes.

5 Q Now, the word diagrams plural is used. Do  
6 you know whether that is -- sometimes we speak and we just  
7 put a plural on things heedlessly. Do you know whether  
8 there are any other diagrams, other than that one that you  
9 looked at?

10 A Well, usually I'm very careful in using the  
11 plural, but nothing comes to mind.

12 Q Are you aware --

13 A Thank you. There is a diagram here. It's  
14 essentially the same as -- well, not quite the same.

15 Q May I see it, sir?

16 A There are some notes on this that are not on  
17 this one. They purport to be the same physical plant.

18 Q All right. You've handed me a document that  
19 is another diagram, which is the same as the diagram in PG-4  
20 with the exception of some handwritten information on PG-4  
21 that does not appear on the other diagram, correct?

22 A Correct.

23 Q But other than that, they are the same?

24 A They are the same.

25 Q And so just again in an abundance of caution,

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1 are there any other diagrams that are different from that  
2 diagram?

3 A No.

4 Q That paragraph that I quoted earlier said you  
5 "reviewed personal statements," what are those?

6 A There are some handwritten notes somewhere in  
7 here that were prepared by a colleague of Mr. -- do you want  
8 me to retrieve them or --

9 MS. STORM: Let's go ahead and take a break.

10 (Lunch break taken.)

11 (Continued deposition from lunch break.)

12 Q Your report states, "The records reveal that  
13 Mr. Newman inhaled sulfur dioxide gas on March 17, 1999." I  
14 need to know if that is an opinion or conclusion that you  
15 have reached.

16 A It's a conclusion I reached. I'm not  
17 distinguishing an opinion from a conclusion. But whatever,  
18 that is my belief.

19 Q Tell me what facts that is based on.

20 A That sulfur dioxide was present at building  
21 179 and there was a release of that gas while he was working  
22 there.

23 Q And you would agree that that could occur and  
24 Mr. Newman could not have inhaled any sulfur dioxide,  
25 correct?

1 A That's possible, sure.

2 Q So I guess my question is what are we basing  
3 it on? What are you basing your conclusion on that he did,  
4 in fact, inhale?

5 A Mr. Newman, based on the review of everything  
6 and talking to Mr. Newman, was healthy before March 17,  
7 1999. He was diagnosed with chemical pneumonitis. He  
8 described an exposure to a gas that would be consistent with  
9 irritative properties of sulfur dioxide and that's primarily  
10 the basis for my opinion.

11 Q Now, this exposure Mr. Newman described, is  
12 that something he described to you on the telephone?

13 A Yes, I've not seen his deposition. I talked  
14 to him two times and that was his description.

15 Q Tell me what he told you on the telephone --

16 A Well --

17 Q I'm sorry -- that you stated was relative to  
18 the exposure?

19 A He described an irritation. I was trying to  
20 get a handle on the duration of his exposure. I knew that  
21 might be dicey going in. And it was. I couldn't get a  
22 precise -- and I suspect nobody can get a precise duration  
23 of the exposure of the gas based on what I said earlier.  
24 I'm also coupling my opinion to the incident report or  
25 description by -- not only by Mr. Newman in the records, but

1 by a colleague, a coworker. I don't know if I'm being  
2 responsive to your question but --

3 Q Well, let me put it this way. Isn't it true  
4 that there's no objective physical evidence that sulfur  
5 dioxide molecules were in Mr. Newman's body?

6 A I don't know that air samples were taken or  
7 if his body was tested for sulphate, urinary sulphate.

8 Q And stated another way, there is no test that  
9 shows any type of objective evidence of an injury that's  
10 traceable to sulfur dioxide; is that fair?

11 A No, that's in the medical realm. If you want  
12 me to respond am I aware of any tests that were taken either  
13 on him as a person or in his workstation that day, I'm not  
14 aware of anything. Nothing has been present brought to my  
15 attention or shared with me.

16 Q Or later?

17 A Well, taking an air sample now is  
18 meaningless.

19 Q You mentioned treatment after that day.

20 A Measuring urinary sulphate today is  
21 meaningless.

22 Q So, sir, are you agreeing with me that there  
23 is no objective evidence of his having inhaled sulfur  
24 dioxide on March 17, 1999?

25 A In other words, are there any tests showing

1 that sul fer di oxi de mol e cu les en tered hi s no strils and/or  
2 mouth?

3 Q Yes.

4 A No, there aren' t.

5 Q And there is no ob jec tive, say, x-ray -- I  
6 don' t know how this is done -- but there are not the tests  
7 that say, okay, here's a test that shows lung scarring;  
8 here's a test that shows some type of abnormality in the  
9 nostrils, or this, that and the other, correct?

10 A That's really in the realm of medicine. I'm  
11 not here to speak to how subjective or less objective. On  
12 the other hand, a diagnosis of chemical pneumonitis can be  
13 made when there is a history of exposure in the absence of  
14 x-ray findings, pulmonary function tests or even osculation  
15 of the chest.

16 Q Let me just stop you right there. Because  
17 you can have it one way or the other way, but we can't have  
18 it both ways. Are you agreeing with me that your area of  
19 expertise does not permit you to render medical opinions?

20 A That's right.

21 Q Tell me what Mr. Newman told you that you  
22 felt was consistent with an exposure to sul fer di oxi de gas?

23 A Irritating properties, the choking sensation.

24 Q First, what do you mean by "irritating  
25 properties"?

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1 A I don't know what he meant by that. I have a  
2 sense of what he meant by that, but assuming he was inhaling  
3 something that was irritating his mucous membranes.

4 Q Those were his words "irritating properties"?

5 A No, he didn't say irritating properties.  
6 Something was irritating him. I didn't take notes on that.  
7 I listened to what he had to say.

8 Q When you said you didn't know what he meant  
9 by that, I inferred you were hearing his words and you were  
10 relaying them to me without an understanding of what he  
11 meant?

12 A I'm almost certain he said "irritation",  
13 something is irritating me. It could have been burning, I  
14 don't have specifics.

15 Q I'm sorry?

16 A I don't have a specific wording. I didn't  
17 take notes of exactly what he said. I didn't think that was  
18 important.

19 Q Well, what about that word choking?

20 A He used the word choking, yes.

21 Q That is something you remember specifically,  
22 he said choking?

23 A Right.

24 Q Any other words that he used that you  
25 specifically remember as we sit here today?

1 A I don't remember.

2 Q Was this the conversation yesterday or the  
3 conversation back earlier?

4 A The earlier one.

5 Q In April?

6 A The earlier one.

7 Q And no other words beside choking?

8 A I don't remember.

9 Q And when did this choking occur?

10 A I don't know.

11 Q You don't know?

12 A No, as I said earlier, he couldn't give me a  
13 time when he was symptomatic until the time that he  
14 evacuated himself from the building. He didn't know when T  
15 subzero started, the original exposure time started. It  
16 wasn't clear to him.

17 Q All right. Well, let me put it to you this  
18 way. Did you get a sense from your conversation with  
19 Mr. Newman about the duration of time on the opposite side?  
20 That is, at one moment he started having this experience of  
21 this choking, and then he evacuated the building; is that  
22 fair?

23 A Yes.

24 Q Do you have a sense of the duration of that  
25 time?

1                   A     I can't be specific. I believe it's  
2     somewhere between -- up to two minutes, but I don't have a  
3     handle on that. I really can't. I don't think he can.

4                   Q     All right. So what I think I hear you saying  
5     is you have no idea because you think Mr. Newman himself has  
6     no idea?

7                   A     No, I believe that he had substantial  
8     exposure for up to two minutes; it could have been less, it  
9     could have been a little bit more, but I believe it was one  
10    to two minutes.

11                  Q     Why is that? Why do you have that belief if  
12    Mr. Newman doesn't even know?

13                  A     I believe it's a reflection of my  
14    understanding of the physiology, the pathic physiology of  
15    sulfur dioxide gas when people have been exposed before that  
16    I've had experience with: the nature of the gas, it's toxic  
17    properties.

18                  Q     Are you saying that sulfur dioxide affects  
19    different people -- I mean, I think when I was talking with  
20    somebody else in a deposition, I asked the question if my  
21    wife and I go for a walk in the woods and we stroll through  
22    poison ivy. It will effect her not at all, but it will ruin  
23    me because I will react to it. Is that what sulfur dioxide  
24    is in terms of some people are adversely affected by  
25    exposure to it and others are not?

1           A     Well, there is a point in which everybody  
2     would be affected. There is a point in which everybody  
3     would die if the exposure is sufficiently concentrated and  
4     sufficiently protracted. If you're suggesting is it an  
5     allergic sensitizer? No, it's not. As chemicals go, it's  
6     not -- it's more of a primary irritant in a dose-response  
7     relationship. It does have sensitizing properties in a very  
8     small percentage of people, but certainly not as potent as  
9     poison ivy, a variety of formaldehydes, and several others.

10          Q     Well, the way sulfur dioxide hurts the body  
11     is it touches on a part of the body that is moist, mouth or  
12     nose, and it reacts with the moisture to create sulfurous  
13     acid, right?

14          A     That is one mechanism, yes.

15          Q     And that's what causes the choking sensation,  
16     for example, or irritation of the eyes or tearing or some of  
17     those symptoms, correct?

18          A     That's partially true, yes. It's not a  
19     complete picture of the toxicology of the gas, but it's part  
20     of it.

21          Q     Well, it's certainly part of the toxicology  
22     insofar as it describes irritation of coughing and choking  
23     and sneezing and whatever, tearing, correct?

24          A     No, not entirely correct.

25          Q     Well, what am I missing?

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1           A     Well, sulfur dioxide is a gas that provokes a  
2     greater bronchial constriction than one would anticipate  
3     just on sulfurous acid alone. There is something there that  
4     is not explained and I don't know. I haven't seen anything  
5     in literature to fully explain it. But sulfur dioxide is a  
6     potent broncho constrictor, and, again, more so than a  
7     strict irritation phenomena would explain. There is  
8     something on a deeper cellular level; that's clear. It's not  
9     just the formation of the acid causes one to choke up. It  
10    is deeper than that.

11           Q     Where is that written?

12           A     I don't know, in the literature. I can't  
13    cite things chapter and verse as I sit here. I would refer  
14    you to the NIOSH criteria document for occupational health  
15    standards for sulfur dioxide gas.

16           Q     You think it's in there?

17           A     Some of it's there. It's an ancient document  
18    today, but some of it's there, yes. The major author of  
19    Sulfur Dioxide Inhalation Toxicity was actually from  
20    Cincinnati, too, Drs. Kettering and Kehoe years ago.

21           Q     Well, let me put it this way, broncho  
22    constriction aside, sulfur dioxide doesn't pick and choose  
23    among the moist membranes of different people's bodies and  
24    say, all right, with this water I will form sulfurous acid  
25    and with this water in this person's mouth I will not,

1 correct?

2 A No, that's correct.

3 Q It's indiscriminate?

4 A It's indiscriminate.

5 Q What is broncho constriction?

6 A It's a narrowing of the airways up to the  
7 bronchial level, up to the alveolar level.

8 Q All right. So we're talking about the  
9 smaller airways as we get closer to the lung itself?

10 A Yes.

11 Q And those openings get narrower because of  
12 some reaction with the sulfur dioxide?

13 A Yes.

14 Q And do we have any idea whether this happened  
15 to Mr. Newman?

16 A I don't know. I suspect not. I mean, there  
17 could be broncho constriction from an exposure to an  
18 irritant gas or vapor or even a particulate for that matter.  
19 I'm not suggesting -- and I don't think any of the medical  
20 records suggest that he developed an immediate asthmatic  
21 response. He had no prior history of asthma.

22 Q Nor am I suggesting. I'm just asking did he  
23 have it and you're saying probably not.

24 A He -- it's unlike he had the type of broncho  
25 constriction that can occur in an asthmatic that is

1 responsive to SO<sub>2</sub>.

2 Q So broncho constriction doesn't apply to this  
3 unless a person has asthma?

4 A No, not at all. One can have restriction of  
5 the bronchioles from exposure to irritant gasses, such as  
6 sulfur dioxide. The asthmatic has a much greater response,  
7 which becomes incredibly profound even ambient pollution air  
8 situations for those people, especially children.

9 Q And my question is simply do you believe that  
10 Mr. Newman suffered from -- I'm not sure if I'm pronouncing  
11 it right -- bronchio or broncho constriction?

12 A I don't know. Again, we're getting into the  
13 medical field. I mean, it's certainly plausible, but I  
14 don't know if he did or not. Choking, I mean, is one of the  
15 overt signs of that sort of thing. There are other causes  
16 of choking, of course.

17 Q And, again, sir, my job in this is to ask you  
18 questions and find out more about your opinions. My mere  
19 asking a question does not mean to imply that you do know or  
20 should know or I expect you to know the answer to any  
21 particular question. A lot of this is finding the  
22 boundaries of where your trial testimony will take us.

23 A Sure.

24 Q Okay. So I don't -- bear with me. What is  
25 respiratory morbidity?

1 A Lung di sease.

2 Q And what are the risk factors for pulmonary  
3 irri tant lung di sease?

4 A Risk factors? The nature of the inhaled  
5 agent, in other words, its chemical and/or biological and/or  
6 physical nature; it's physical and chemical properties; the  
7 concentration that one is inhaling; the duration of  
8 exposure; individual biological factors, human factors that  
9 might predispose one to adverse effects.

10 Q Let me ask you this. Take a look at your  
11 report because I think we're on the wrong -- on page two of  
12 your report it says, "Mr. Newman did not have any precedent  
13 respiratory morbi di ty and no apparent risk factors for  
14 pulmonary irri tant lung di sease."

15 A I see where you're going.

16 Q I'm trying to figure out what the risk  
17 factors are for pulmonary irri tant lung di sease.

18 A He didn't have a preexi sting lung di sease.  
19 Nothing suggested obstructive or restri ctive lung di sease,  
20 asthma, emphysema, fibrosi s.

21 Q I take that as your answer with respect to  
22 not having respiratory morbi di ty. What are the risk factors  
23 for pulmonary irri tant lung di sease?

24 A I mentioned them.

25 Q Well, to me -- and again this is just me, a

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1 lay person -- but I would think of a risk factor -- when I  
2 think of risk factors, I think of say a risk factor for  
3 heart disease is a diet high in cholesterol. And the -- so  
4 I'm thinking of pulmonary irritant lung disease, we ought to  
5 talk about what that means, that ought to have risk factors  
6 too that if a person has this particular factor in their --  
7 whether it may be their history, their diet, daily living  
8 activities, occupational exposures, that those are risk  
9 factors for that condition; do you agree with me?

10 A Well, I think I gave you risk factors. You  
11 used diet as a risk factor. Ingestion of fatty foods is a  
12 risk factor; inhalation of sulfur dioxide is a risk factor.  
13 It's not ingestion, it's inhalation, but it's a function of  
14 dose, dose duration.

15 Q Well, the risk factors that you gave me were  
16 concentration, right?

17 A How much fat in your food that you eat. It's  
18 no exception, it's no different.

19 Q How is the concentration -- the concentration  
20 of what?

21 A In this case sulfur dioxide gas.

22 Q When you say there is no apparent risk  
23 factor?

24 A What number are you referring to?

25 Q Page two of your report.

1 A Where?

2 Q There is a paragraph that reads, "The records  
3 reveal" -- the third sentence in that paragraph is the one  
4 I'm quoting.

5 A There was nothing in the records that  
6 indicated he had preexisting lung disease.

7 Q All right. And then my question is -- I've  
8 understood that. What I want to know is your understanding  
9 of the risk factors for pulmonary irritant lung disease.

10 A Risk factors -- I'm repeating myself, but the  
11 risk factor are several, and in no particular order, but two  
12 in the top would be what is the agent or agents, what is the  
13 concentration that is inhaled that reaches the target  
14 tissues and cell sites, what is the duration of exposure to  
15 that provocative agent or injurious agent. There are other  
16 risk factors, but those are the big three. There can be  
17 unique individual biologic factors, there can medication  
18 factors, there can be metabolic uptake factors, biochemical  
19 factors, it goes on and on and on. But the big three are  
20 what is the chemical, how much is inhaled and how long did  
21 one inhale it. Those are clearly risk factors, as I  
22 understand risk factors.

23 The hazard is the agent, but the risk is the  
24 function of exposure and exposure is defined by how much and  
25 how long and what is it. We use an equation, but a very

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1 simple equation in our business that Hazard plus exposure  
2 equals risk. In this case sulfur dioxide is the hazard. If  
3 it is in a contained system, it's always hazardous. But if  
4 there is no exposure, there is no risk.

5 Q What is your basis for concluding that  
6 Mr. Newman had pulmonary irritant lung disease?

7 A He was diagnosed with chemical pneumonitis.  
8 His lungs were burnt.

9 Q What does "his lungs were burnt" mean?

10 A Chemical pneumonitis, inflammation of the  
11 respiratory tract tissues.

12 Q So he had inflammation of the pleural  
13 membrane secondary to exposure to sulfur dioxide gas; is  
14 that what you're saying?

15 A The pleural membrane?

16 Q Well --

17 A Well, perhaps he did. I don't recall any  
18 pleural effects. It's certainly conceivable.

19 Q Well, what does --

20 A But I believe chemical pneumonitis is not so  
21 much one of chemical pleurisy as it is chemical alveolitis.

22 Q And you're getting that on the basis of the  
23 medical records that you reviewed. You're not qualified to  
24 make a diagnosis --

25 A No, I'm not.

1 Q -- of that, correct?

2 A That's right.

3 Q And with respect to those factors that you  
4 listed earlier: Concentration, duration -- were those the  
5 two big ones? Was there a third?

6 A Well, it has to be what the agent is, that  
7 goes hand-in-hand.

8 Q Sulfer dioxide. What assumptions have you  
9 made regarding those factors in this case?

10 A I believe that Mr. Newman, based on my review  
11 of the records, that he had an exposure up to two minutes,  
12 somewhere between one and two minutes; that coupled with his  
13 medical findings tell me that he had an exposure above 100  
14 parts per million of sulfer dioxide gas.

15 Q And what is his precise -- is the precise  
16 condition that we're talking about chemical pneumonitis? Is  
17 that the condition that we're talking about?

18 A I don't know what it is today.

19 Q Well --

20 A There several medical records and I read  
21 them, but I didn't -- I'm not here to second guess those.

22 Q If I understand you right -- if I understand  
23 you right, you're saying that you understand that there is a  
24 release of sulfer dioxide, and that at some later point a  
25 doctor evaluated Mr. Newman and concludes that he had

1 chemical pneumonitis, and that you're taking that fact and  
2 perhaps Mr. Newman's irritation on that day and you're  
3 trying to correlate if he has this resultant condition, what  
4 must have been his exposure; have I got that right?

5 A Pretty much.

6 Q What has been your background and experience  
7 in doing that in the past with others, wherein you have  
8 correlated a person's condition to -- and there is probably  
9 a word for the certain kind of reasoning, maybe --

10 A Forensics.

11 Q Well, I was thinking in terms of inductive --  
12 I never got those words straight in my head a long time ago.  
13 You have taken the condition, and knowing the agent, that  
14 there was this potential that was in the environment, what  
15 must the exposure have been to cause that result. And I  
16 want to know what have you done -- how many occasions have  
17 you reviewed or have you done this in the past where you  
18 have had a person who was exposed to a known dosage of X  
19 amount concentration of sulfur dioxide and they had these  
20 symptoms or these medical sequelae?

21 A With sulfur dioxide I can probably count on  
22 the fingers of one hand the times that I have done it, but  
23 have never attempted to extrapolate retrospectively a dose.  
24 It really wasn't important. There was no question a person  
25 was excessively exposed to sulfur dioxide and a plan had to

1 be put into place to prevent future. In a more general  
2 sense I have done that very thing you have talked about  
3 perhaps tens of thousands of times. And, in fact, I am the  
4 principle investigator in investigating 6,000 cases of  
5 prostate cancer looking back through the lifetime of  
6 exposures of men to whatever they did in their occupation to  
7 see if there is a link between their cancer, their disease  
8 and what they did for a living, where they worked and how  
9 much their exposures might have been in the absence of air  
10 sampling and ventilation measurements. It is an established  
11 scientific protocol to follow to do just that.

12 Q Just so we're here, you're not here to make  
13 any link between exposure to sulfur dioxide and prostate  
14 cancer?

15 A No, I'm not.

16 Q Someone reading the transcript many months  
17 from now would --

18 A Let's hope not.

19 Q Tell me about the cases that you can count on  
20 one hand in which you looked at someone with sulfur dioxide  
21 exposure and the symptoms that they've suffered as a result.

22 A All four occurred in two foundries wherein  
23 Ford Motor Company was considering the use of sulfur dioxide  
24 to produce cores in core-making operations, which we were  
25 discussing earlier this morning. In fact, as a result of

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1 that, one of the decision factors in not using sulfur  
2 dioxide was a lack of good control that we could achieve  
3 with that gas. There were other economic factors, but there  
4 were certainly the industrial hygiene that argued against  
5 using that process. These were men who had exposures to --  
6 for lack of a better term -- puffs of sulfur dioxide as a  
7 burp from the core-making machines so much so that they had  
8 medical problems and had to be admitted to hospitals and  
9 treated accordingly. There was no attempt to work back to  
10 find out what their exposure was, it really wasn't  
11 necessary. They were healthy before. Their only exposure  
12 was sulfur dioxide. Their signs and symptoms were  
13 consistent with exposure. End of story.

14 Q And what symptoms did they have?

15 A Coughing, choking, eye irritation, in some  
16 cases labored breathing, dyspnea.

17 Q What does dyspnea mean?

18 A Labored breathing, difficulty breathing.

19 Q And these puffs -- is this when the core is  
20 made itself that's used later in the mold-making process?

21 A No, it's in the manufacture of the cores  
22 themselves wherein sulfur dioxide is injected under high  
23 pressure into the sand grains and the polymer that binds the  
24 sand.

25 Q Then you have something you can use to make

1 the cup to use our example before?

2 A Right.

3 Q Did the workers -- these four men, I take it  
4 this was a non-fatal exposure; is that correct?

5 A That's right.

6 Q These four men, when they were -- did they  
7 suffer these results immediately upon when the first core  
8 was made or is this something that was as a result of  
9 chronic exposure that could only be -- the only attributable  
10 causal factor that you determined was their working in  
11 proximity to this particular manufacturing process?

12 A Nothing suggested it was a chronic exposure.  
13 They probably had day-in and day-out exposure. In fact, my  
14 air sampling demonstrated that. But what caused their  
15 problems was this single burst, this release of gas in an  
16 uncontrolled situation.

17 Q But that would happen every time they made a  
18 mold, right?

19 A No, it could be function of many things,  
20 improper addition rate, withdrawn pressure, adding too much,  
21 adding too much at the wrong time, or on top of all that the  
22 ventilation isn't work. But for the ventilation system not  
23 performing the way it was designed, the person wouldn't have  
24 been exposed. There are many factors that led to their  
25 exposures. It wasn't one -- it was a systematic issue in

1 terms of things went wrong.

2 Q Were all of these men injured at the same  
3 time?

4 A No, two were. Two in Windsor were. Two or  
5 three or four, whatever it was, in the Michigan Casting  
6 Center were over a several week period.

7 Q But all of these men, prior to suffering  
8 injuries that led to their hospitalization, they had been  
9 subjected to sulfur dioxide in their workplace in the past  
10 and that's all I mean by chronic. It wasn't the first time  
11 the mold was made and they had that experience, correct?

12 A When I was called -- in fact, I went on two  
13 site of the visits. And somebody that worked for me went on  
14 another one. We don't know what their exposures were  
15 before, there is no way. We had no indication on  
16 interviewing the people or their supervisors or their  
17 colleague if the exposures were massive daily. It's  
18 unlikely. People wouldn't tolerate that sort of thing.  
19 These were equipment breakdowns, frankly.

20 Q Okay. At the same time, they were involved  
21 in a manufacturing process on a daily basis that used sulfur  
22 dioxide, correct?

23 A Yes.

24 Q And so there may have been exposure to sulfur  
25 dioxide over a long period of time within permissible

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1 limits, less than two parts per million or less than five  
2 parts per million on a daily basis over a time, correct?

3 A No, not correct. I don't believe that.  
4 Because the prior process -- and the subsequent process, the  
5 company went back to use formaldehyde as the curing agent.  
6 And we had that controlled very well. The permissible  
7 exposure levels at the time were roughly equal to two  
8 gasses. Either it worked beautifully and perfectly or it  
9 didn't work at all. And when it didn't work at all, it was  
10 dramatic, in the case of these four or six people.

11 Q Okay.

12 A So I believe since the formaldehyde was  
13 controlled for which we had mountains of data, it is  
14 reasonable to conclude that the sulfur dioxide was  
15 controlled day-in and day-out. Not to say that now and then  
16 there couldn't be a little bit here and there, of course,  
17 but manageable.

18 Q How did you come to investigate -- or did you  
19 come in after the fact, after these men had left and gotten  
20 whatever medical treatment they needed?

21 A Well, actually we came in before the fact.  
22 We did some preemptive industrial hygiene monitoring on the  
23 research facility and forewarned the plants that if they go  
24 with this process, this is what they could be faced with.  
25 At that research process, no issues. Things were controlled

1 fairly well. But in response to your question, we were  
2 called in after the people reported to the plant medical  
3 department with health problems from the gas.

4 Q And what did you do? Did you interview them?  
5 What did you do?

6 A I interviewed one man. Somebody else  
7 interviewed one or two of the others. We didn't interview  
8 all of them, I know that. What did we do? We went to the  
9 plant. We measured ventilation, took air samples, we  
10 studied the work practices. We worked with the engineers on  
11 the injection rate of sulfur dioxide into the core-making  
12 materials. Our objective then was to make sure the process  
13 was operating in a way that it wouldn't cause further harm  
14 to people.

15 Q All right. And, I guess, you said earlier  
16 that in these situations, in these four cases it was  
17 unnecessary to determine what their exposure to sulfur  
18 dioxide had been during that puff event, correct?

19 A It served no useful purpose.

20 Q So you agree with me that it was not done?

21 A It was not done. It was massive. We knew it  
22 was massive. Whether it was 192 parts per million or 217.5  
23 is neither here nor there.

24 Q Say that again.

25 A It was not important to have a precise

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1 estimation of whether it was 119 or 217 parts per million of  
2 sulfur dioxide gas was not important. It was a situation  
3 that was out of control that required engineering  
4 intervention and personal protective equipment.

5 Q And from your report, there was something in  
6 terms of this sulfur dioxide, one of the features of it is  
7 that you can be exposed to several hundred parts per million  
8 and as long as you get out of there, get out of that area,  
9 it will not cause you permanent harm, correct?

10 A That would be generally true for most people.  
11 If they didn't have any antecedent medical conditions such  
12 as asthma, that would be a generally true statement. If you  
13 can evacuate yourself from the area, there should not be --  
14 given biological variabilities.

15 Q So I guess then going back to this situation  
16 with these four gentlemen.

17 A There might have been six. It's been many,  
18 many years.

19 Q You said one hand.

20 A Okay, sorry.

21 Q Those people were able to return to normal.  
22 I mean, after their medical treatment, they didn't have  
23 any --

24 A I don't know.

25 Q Well, you certainly would have been made

1 aware of it if there were continuing problems?

2 A In a perfect world, yes. I managed a  
3 department of 22 people for half a million people. We were  
4 run ragged. In an idea world we would want that  
5 follow-through and coordinate with medical, maybe even visit  
6 the people at home. We didn't do that. We didn't have the  
7 luxury of doing that, frankly.

8 Q Let me put it another way. You're unaware of  
9 any ongoing problem or permanent damage caused to the  
10 gentleman that were involved in those events at Ford?

11 A Maybe they didn't have it, maybe they did. I  
12 have no idea.

13 Q You agree with me, you're unaware of their  
14 having permanent damage?

15 A That's right.

16 Q So consequently, my question is on the basis  
17 of that experience, how are you able to correlate  
18 Mr. Newman's symptoms, his diagnosis of chemical pneumonitis  
19 to a concentration and a duration of exposure with the  
20 precision that you have been able to? Mindful that there  
21 has been -- no air sampling was done, correct?

22 A Right.

23 Q You have made no calculations as to the  
24 concentration of the sulfur dioxide in the area where  
25 Mr. Newman was, right?

1           A     I gave you my best belief of what his  
2     exposure was. It's not precisely time-bounded. It's not  
3     precisely concentration-bounded. I cannot do that. Nobody  
4     can do that. What I have done in former cases where people  
5     have been exposed to sulfur dioxide, after the fact I or  
6     people I supervise would go in and take direct reading  
7     concentration of gas clouds or puffs of SO<sub>2</sub> during not a  
8     singling, but the breakdown situation. We have had results  
9     quite frankly all over the place, but all of them were  
10    excessively high. They were so high, in fact, that we felt  
11    this process was unreasonably dangerous and we didn't  
12    authorize from our perspective continued use of it because  
13    Ford engineers couldn't guarantee better control and that  
14    was too much, so we abandoned the process.

15           Q     And my question, sir, is how can you look at  
16    Mr. Newman and say, okay, and he had choking sensation,  
17    irritation, and he had a diagnosis of chemical pneumonitis,  
18    and then say all right, that translates to -- given that the  
19    agent is sulfur dioxide, that translates to this  
20    concentration and this duration of exposure?

21           A     Well --

22           MS. STORM: I'm going to object. I don't think  
23    we've gotten to concentration.

24           Q     Let me -- while we're on the subject, I  
25    thought you said between 100 and 200 parts per million over

1 between one and two minutes?

2 A That's my belief.

3 MS. STORM: Okay. I apologize.

4 Q No problem.

5 A I'm telling you it's based on my experience,  
6 it's my best --

7 Q And you agree with me that with your  
8 experience -- the experience that you've had, when you've  
9 dealt with these four or five or six gentleman who were  
10 exposed during this foundry operation to a puffing event,  
11 that no one went back and measured the exposure that these  
12 gentleman had?

13 A You can't do that. There is no way that can  
14 be done.

15 Q All right. So you agree with me that you  
16 don't know what they were exposed to?

17 A No, I can tell you it was excessive, but I  
18 can't tell you how much.

19 Q Tell me what excessive means.

20 A One bullet through the chest or ten? It  
21 really doesn't matter.

22 Q Give me a range.

23 A I did. I said I believe 100 to 200 parts per  
24 million, it could have been higher, for up to two minutes.  
25 That's about as precise as I can get.

110  
1 Q Forget about Mr. Newman for a moment. Tell  
2 me -- do you agree with me that no one measured the SO<sub>2</sub>,  
3 sul fer di oxi de exposure that was experienced by the men, the  
4 four to six men that you were involved with at Ford?

5 A As they were inhaling the gas, that's  
6 correct. Nobody took air samples as they were exposed.

7 Q And that's the basis for your comparison in  
8 Mr. Newman's case, is it not?

9 A No, it's not. You're trying to narrow my  
10 opi ni ons down to a handful of people a long time ago. I  
11 personally have taken air samples, hundreds of air samples  
12 for sul fer di oxi de on hundreds of workers or hundreds of  
13 workplaces with hundreds of workers. And that's part of my  
14 collective experience. What is a problematic dose of this  
15 gas. And I'm pleased to report that the lion's share of  
16 them are not problematic. They're well controlled. There  
17 were a few that were not and this is what we're talking  
18 about. That is part of my experience too. I have a sense  
19 of what a threshold dose is. And as a matter of fact, so  
20 does NIOSH, so does OSHA, so does the American Industrial  
21 Hygiene Association, and so does the American Conference of  
22 Young Industrial Hygienists. They have not that absolute  
23 figure above which everybody is poisoned below which  
24 everybody is safe, but the most plausible threshold limit  
25 value that will protect the health of most people exposed to

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1 it. It's not just four people out of many, many years ago.  
2 There's a collective data base out there. We have a pretty  
3 good understanding of how much SO<sub>2</sub> would be injurious at  
4 what concentrations and for how long.

5 Q If someone were exposed to ten parts per  
6 million, that's likely to induce coughing, won't it?

7 A For how long?

8 Q You tell me.

9 A One breath, no. Half an hour, most people  
10 would say I prefer not to be around. Would it be lethal?  
11 No. Would it cause lung disease? Probably not, unless a  
12 person is hyper-susceptible and they're not asthmatic going  
13 in.

14 Q Are you telling me that one minute in a  
15 concentration of ten parts per million of sulfur dioxide a  
16 person is ambivalent to the existence of the sulfur dioxide?

17 A Some people might experience profound  
18 irritation, others are more stoic, much more stoic.

19 Q And so if that's the case is the  
20 concentration of parts per million of the sulfur dioxide  
21 together with its duration so resulting in experiences that  
22 are so variable among different people?

23 A There are variable to a point. Like I said  
24 earlier, if we were all exposed to 1 percent -- 10,000 parts  
25 per million -- for five or ten minutes, we're going to die.

112  
1 Maybe not right away, but we'll all die. Everybody in this  
2 room sooner or later will die from that exposure. As the  
3 exposure goes down and the duration of exposure perhaps goes  
4 down as well, then it becomes more variable between you and  
5 me and these ladies. It would be a tremendous biological  
6 variability between one person to the next. The higher the  
7 dose the closer we all come to the same response. At the  
8 lower doses, there is tremendous biological variability.  
9 I've seen that in workers. I personally, for whatever  
10 reason, seem to tolerate more SO<sub>2</sub> than some people who find  
11 it profoundly irritating. That is one of the reasons why  
12 the threshold limit value has been established where it is,  
13 to prevent irritation in most people, but not everyone.

14 Q When you say low doses, tell me what you mean  
15 by that.

16 A Well, it's a relative term. And the reason I  
17 say it's relative, sulfur dioxide as an ambient air  
18 pollutant is really high of EPA's hit list because the  
19 six percent of us who have asthma are profoundly affected by  
20 increased elevations of SO<sub>2</sub> that comes primarily from our  
21 power plants. The rest of us don't have a problem.

22 Q Sir, let me stop you there. And I'll let you  
23 explain whatever you want. Really, all I want to know is in  
24 the last sentence you said, you said in low doses of sulfur  
25 dioxide there's tremendous biological variability in the

1 responses that are experienced by the people who are  
2 exposed. And all I want to know is when you said low doses,  
3 what does that mean? Is a thousand parts per million, is  
4 that ten parts per million, 50 parts per million? Give me  
5 some understanding.

6 A A low dose is relative to the recipient. An  
7 asthmatic can be profoundly affected by a dose that you and  
8 I might consider low and are they're broncho constricted to  
9 the point they are turning blue and they're calling 911 to  
10 save their life. So it's a relative term. If a person  
11 doesn't have antecedent asthma and they're occupationally  
12 exposed, they are adults, they can gainfully acquire a job  
13 and hold a job, dose low dose would be below the action  
14 level, that is below one part per million as an eight hour  
15 time waited average. But even there, there are no  
16 guarantees that that would be protective of the health of  
17 all people.

18 Q What is your understanding of the -- you  
19 referred to him working under a process tank?

20 A This is a conical tank. I think we have a  
21 diagram. He was on his back working underneath it  
22 installing insulation. This was a device, it appeared to be  
23 a mixing device. I saw one this morning. And presumably it  
24 has blades inside for mixing chemical products, an insulated  
25 conical-shaped vessel.

114  
1 Q Where was the release? Where was the sulfur  
2 dioxide, the source of release?

3 A I don't know.

4 Q Take a look at --

5 A I understand there is a debate about that.

6 Q Take a look at the diagram that we marked as  
7 73. Does that help you answer my question about the  
8 location of the sulfur dioxide that was released?

9 A Since I just received this today, I'll have  
10 to look at it carefully. I don't see anything on here where  
11 it indicates a release point.

12 Q What's your understanding on which you base  
13 the report?

14 A I don't know where the gas was released from;  
15 I really don't know.

16 Q Is it not relevant to your opinions to know  
17 that?

18 A Well, I believe it was released somewhere in  
19 Building A, but I can't tell you -- give you a value.  
20 Somewhere in Building A, I can't be specific.

21 Q How does the gas -- assuming it is released  
22 in Building A, how does it get into the area where you've  
23 drawn the N inside a circle to where Mr. Newman is?

24 A There are several ways it can get in. First  
25 of all, there's not a contiguous wall. It had breeches, had

115  
1 holes in it. There were holes in the back wall on the back  
2 side of this building. One of the two doors, I understand,  
3 was open about three to four feet on the day of the  
4 occurrence.

5 Q How do you know that?

6 A Well, I was told that by Mr. Newman.

7 Q Did he tell you which door was open?

8 A In one of the sketches it was this door,  
9 would have been the door closer to the taller part of the  
10 building. This door.

11 Q Why don't you mark that with a circle, if you  
12 would, the door that Mr. Newman told you was open. It was  
13 open what? You have written --

14 A He said it was open three to four feet, not  
15 fully. It's a ten-foot wide door, eight feet high.

16 Q Is that what you have written, three to  
17 four feet?

18 A Yes.

19 Q How does the gas go to -- from Building A to  
20 Building B?

21 A As I said, there were numerous breaches in  
22 this wall. There were breaches in the back wall. There was  
23 an exhaust fan that I understand was not operating at the  
24 time Mr. Newman was there. This door was open.

25 Q And what's the basis for your understanding

1 that that exhaust fan was not operating at the time?

2 A I asked Mr. Newman initially if there was  
3 ventilation equipment in the area. He said no. And  
4 yesterday when I talked to him specifically about this fan,  
5 he said it was not running.

6 Q So how would the gas get into the area where  
7 Mr. Newman was?

8 A Well, there are several openings, as I  
9 mentioned.

10 Q I believe that you have identified several  
11 paths.

12 A Several paths. There was another one, there  
13 was a floor drain where he was working. It's possible that  
14 it could have come through a floor drain. I don't know  
15 that. It's certainly an avenue.

16 Q How does it get in the floor drain?

17 A It was a liquid. It could enter the floor  
18 drain and if somebody doesn't pour a bucket of water down  
19 the floor drain every month or so, it acts like a gas  
20 entrance.

21 Q What was the temperature that day?

22 A I don't know.

23 Q Let's -- it was March 17.

24 A Uh-huh.

25 Q Let me ask you to assume it's well above

117  
1 14 degrees Fahrenheit. Is there going to be any liquid to go  
2 into any drain?

3 A Not for a second. It's going to flash very  
4 quickly.

5 Q Within a second -- we're talking less than a  
6 second, it's gaseous?

7 A It depends on the volume. A large volume,  
8 it's going to take longer. A small volume, it's getting  
9 colder as it's evaporating.

10 Q What's your understanding of the mass of the  
11 gas that was released?

12 A There was a report by a P&G engineer of .38  
13 points.

14 Q Are you aware of any fact that would  
15 contradict that report?

16 A No.

17 Q Do you have any professional dispute with the  
18 calculations or the conclusions of that report?

19 A I didn't study it with that respect because I  
20 didn't have the equipment and I didn't have the plumbing,  
21 the valves and the containment.

22 Q How about the methodology? Assuming the  
23 measurements were accurate; the methodology, right?

24 A Well, there were measurements made of the  
25 physical equipment, not measurements of the gas

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1 concentration, of course. The chemical engineering concepts  
2 that the P&G engineer took down, I have no problem with  
3 that. Conceptually, it's --

4 Q All right. Based upon that, would you be  
5 able to calculate the volume of the gas in Room A, Building  
6 A?

7 A If I have the dimensions of Room A,  
8 length/width/height, minus the equipment in the room, some  
9 net volume, ones that equipment is accounted for, and if I  
10 knew .38 pounds in so many cubic feet or cubic meters or  
11 whatever, I could calculate the concentration. That would  
12 be an average concentration. I could also calculate an  
13 average concentration as a function of ventilation in that  
14 room. I can calculate decay concentrations as a function of  
15 the peak concentration and what that concentration would be  
16 as the ventilation goes through. I can make a lot of  
17 calculations.

18 Q Tell me how you would make those calculations  
19 from -- let's start with how do we calculate the  
20 concentration in parts per million of the sulfur dioxide in  
21 Room A?

22 A Well, I'll go through the drill with you. So  
23 many pounds in a certain volume of air; that is mass volume.  
24 Then one would make a conversion into volume-volume, that  
25 would be parts per million. In other words, .38 pounds in

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1 let's say how many thousand cubic feet in that room minus  
2 the net; that would give you milligrams of sulfur dioxide on  
3 average per cubic feet in that room. That would say the  
4 concentration one foot below the ceiling in this corner  
5 would be no different than one foot off the floor in that  
6 corner; that is the average concentration. Then one would  
7 convert pounds per cubic feet into milligrams per cubic  
8 meter by convention. Then one would one take milligrams per  
9 cubic meter and for ballpark purposes, given the temperature  
10 pressure that day -- Cincinnati being probably not much  
11 different than Detroit, maybe 700 feet above sea level --  
12 times 24.45, divided by the molecular weight of sulfur  
13 dioxide, which is about 64.1. That would give you the  
14 average sulfur dioxide gas concentration throughout that  
15 room. It wouldn't say anything about high concentrations in  
16 one area and lower concentrations somewhere else.

17 Q Now, let's talk about that. First off, 24.45  
18 is the volume of gas at those temperatures and pressure; is  
19 that right?

20 A That is the gram molecular volume of gas;  
21 25 degrees centigrade and 761 degrees of pressure.

22 Q Which is the standard?

23 A Pretty much standard for an ideal gas. And  
24 sulfur dioxide would be pretty close to that.

25 Q When the gas is released, how long does it --

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1 I mean, maybe this is -- I'm using the wrong jargon, but  
2 what is its dispersion rate, if you will? How quickly does  
3 the gas try to achieve equilibrium?

4 A Clearly molecules move around. And with  
5 sufficient time, there will be -- short of the gas molecule  
6 reacting with surfaces and being removed from the  
7 environment that way, there would be an homogeneous  
8 atmosphere. The concentration at any one point would be the  
9 same. Now, to answer your question, it's not a simple --  
10 cannot be done by simply. It's a function of primarily the  
11 mixing factor, the turbulence and the ventilation within a  
12 facility. There are other factors, thermal gradients, maybe  
13 even pressure gradients. But primarily it's the movement of  
14 air within that facility that causes the mixing, like hot  
15 water going into a bathtub of cold water. If you don't stir  
16 it, it's going to be hot at one end and cold at the other.  
17 But as you're stirring, it very quickly will become -- the  
18 stirring is analogous to a ventilation system.

19 Q What would be -- I guess people just pick  
20 mixing factors based upon their experience and judgment?

21 A Yes.

22 Q And having been there today, what mixing  
23 factor would you chose in terms of when the gas enters --  
24 when it goes from Building A to Building B, the quickness at  
25 which it achieves equilibrium?

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1           A     I have never seen mixing factors applied  
2     between two buildings who are ostensibly separate. Granted  
3     there are breaches in that wall. But in a practical sense,  
4     those breaches do not allow for mass movements of tremendous  
5     volumes of air. They allow for movements of small volumes  
6     of air. I have never seen a mixing factor applied from one  
7     building to another building and vice-a-versa. If I found,  
8     for example, very poor ventilation in Building B or Building  
9     A, you could apply a mixing factor from anywhere from one to  
10    ten. I've never seen it from one building to the next; that  
11    is bizarre.

12           Q     Well, if we take it, as I think we've said,  
13    if the gas -- if the sulfur dioxide release occurs in  
14    Building A and Mr. Newman is in Building B and you have  
15    identified certain paths sulfur dioxide could that to go  
16    from Building A to Building B, how do we determine how  
17    quickly it would -- how long would it take to get to  
18    Mr. Newman?

19           MS. STORM: I object to the use of the words  
20    "Bui l di ng A. "

21           Q     And you can --

22           MS. STORM: Since it's not a building.

23           A     It was a tent as far as I'm concerned.

24           Q     I'm using that term solely as it is described  
25    on the diagram.

1 MS. STORM: Which we're also objecting to.

2 A I can't tell you how quickly because there  
3 are numerous factors. A very important consideration in all  
4 this is if we assume this wind direction, setting aside  
5 velocity for a moment, was steady state. Having said that,  
6 it's rare that wind or God given ventilation is steady  
7 state. It's constantly changing in direction. It might be  
8 steady state for a minute or two minutes. But it's shifting  
9 in direction and in velocity, short of a gale. When the air  
10 was coming in this direction, as it was this morning, coming  
11 by the building that way, it creates a ram effect on this  
12 side of the building, positive pressure. On the leeward  
13 side of the building, the back side there is a negative  
14 pressure. As the building -- as the wind passes over the  
15 building, it creates a negative pressure and an envelope  
16 around the back side of that building. That negative  
17 pressure promotes intrusion of contaminants back into the  
18 building. And I believe that's the major way that the  
19 sulfur dioxide got from tent A, if you will, into Building  
20 B.

21 Q And so take me through it with a pen, if you  
22 will -- or first, tell me the gas goes out of Building A,  
23 out that door, and turns right, goes around the building and  
24 through the lower pressure comes down, comes back in through  
25 some other source?

1                   A     It could be that way since we're talking  
2     about a non-rigid structure, it's certainly feasible or  
3     plausible that there are breaches in that structure at  
4     ground level.

5                   Q     So, like, underneath the plastic, is that  
6     what you're saying?

7                   A     Exactly.

8                   Q     So anyway -- but am I right that it goes --  
9     and I don't want to write on your diagram, but you write on  
10    your diagram. But -- I'll tell you what, I'll write on  
11    this -- my scrap copy here. I get the impression you're  
12    saying that whatever -- wherever the source is, the gas  
13    comes and goes back through the low pressure side of the  
14    building?

15                  A     Yes.

16                  Q     And finds a way into the building in that  
17    manner?

18                  A     Yes.

19                  Q     All right. Can you tell me -- if that's --

20                  A     Well, perhaps I can show you with a side  
21    view, if I may.

22                  Q     I'll tell you what. I'm going to give you  
23    another piece of paper, that way we'll mark this as 74. And  
24    this way you'll have -- I'm sorry, I always get leary when  
25    we have got double-sided copies. Okay.

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1           A     I'm going to draw -- give you a ground level  
2 building. Let's say there is a stack and let's say there is  
3 another stack in that building for some process. And the  
4 prevailing wind is in this direction, whatever velocity.  
5 What you will get is, of course, when the wind hits that  
6 building, it's not going anywhere. Since it has momentum,  
7 there will be equal contours of air passing around the  
8 building. And say we had a make-up air inlet on the  
9 building on this side.

10           MS. STORM: A what?

11           A     A make-up air inlet, an exhaust fan -- let's  
12 just put a hole in the building. This is going to be a  
13 positive pressure on this side. As the air sweeps over the  
14 building, it's going to continue its momentum. It's going  
15 to keep going in this direction. It's not going to  
16 magically come back in the building as your first drawing  
17 suggests. This is going to be a negative pressure side of  
18 the building on the leeward side. If this was a process  
19 that was giving off a contaminant, there will be turbulence  
20 around the back side of the building like this -- it's not  
21 exactly like that -- to which to air pollution engineers and  
22 ventilation engineers and people like myself, industrial  
23 hygienists, it's very important to have a source contaminant  
24 above this eddy zone, such that a stack like this, the smoke  
25 is entrained and it has little opportunity to get sucked

1 back in the building.

2 The point being made is that a contaminant  
3 released let's say close to ground level back in this eddy  
4 zone is going to be caught and brought back in the building.  
5 Stack heights are important, release points are important,  
6 but you have some meteorology, for lack of a better word,  
7 negative pressure on the leeward side of the building, every  
8 industrial hygienist, as it's been a bugaboo from the  
9 get-go, we see this all the time, we see it not only in  
10 industrial plants, but at schools, hospitals, shipping  
11 docks, where air contaminants are drawn and brought back  
12 into the building, not in as high a concentration as the  
13 release point, there is considerable dilution in many cases.  
14 But there are situations there are rich concentrations --  
15 not in rich concentrations, but high concentrations are  
16 simply taken out and brought right back in through the  
17 turbulence. This is not the best diagram.

18 Q That is terrific. Please though take the  
19 original of Exhibit 73 and now with a bird's eye view  
20 looking down, suggest to me the eddy effect that you  
21 portrayed on Exhibit 74.

22 A What I'm doing now is not -- is something  
23 that in many cases to give you all the eddy currents at any  
24 one point in time we need many factors: Time of day, solar  
25 load, barometric conditions, temperatures, wind velocity,

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1 changing wind velocity. But in general you have a positive  
2 pressure effect coming this way and it's going to create the  
3 greatest negative pressure in an envelope that surrounds --

4 Q I'm going to give you another diagram. We'll  
5 mark this as 75.

6 A I mean, literally, everything -- if this  
7 building stood alone or by itself, the situation would be  
8 very simple. But when you have intervening terrain,  
9 intervening structures as we did over there, the turbulence  
10 and the eddy currents and what we call diffusivity currents  
11 become extremely complicated. And frankly I'm not going to  
12 put educated arrows on a piece of paper. I'll tell you that  
13 the back side of this building is under a negative pressure  
14 but the turbulence of the other buildings can have a  
15 profound effect on the degrees of negative pressure behind  
16 that building. And, frankly, I think you're trying to pin  
17 me down into something that will come back to haunt me.

18 Q I'm trying to understand your testimony.

19 A I think you understand it. I think you  
20 understand what I'm getting at. I think you understand that  
21 when you have a prevailing wind this way, you have negative  
22 pressure behind the building that can be affected by  
23 velocity, direction, solar loading, geographic features, if  
24 there were hills, and certainly tall structures around that  
25 building, all have a bearing on air flow.

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1 Q I marked Exhibit 75. Are you unwilling to  
2 tell me where this negative pressure is?

3 A You want me to take something that's a very  
4 sophisticated process that probably should be done in many  
5 cases to give you all the little educated arrows by a  
6 computer modeling program.

7 Q So I take it you are declining to indicate on  
8 this diagram where you think the negative pressure area is  
9 with the proviso --

10 A Be happy to.

11 Q -- that's it's something that is complex.

12 A The negative pressure area literally is in  
13 this envelope from -- this was not a building then, assuming  
14 the tent structure took that geometry like this. And, of  
15 course, that could extend out. It's not a magic line. From  
16 that point to this point, we're in a negative pressure in  
17 building eddy currents based on prevailing winds sweeping  
18 over the building this way. Positive pressure here,  
19 negative pressure there.

20 Q Let me ask you to assume that this door is  
21 open when -- and I'm pointing to the door that is at the top  
22 of Building A on Exhibit 75. Assuming that's open at the  
23 time of the sulfur dioxide release within Building A and  
24 assuming the wind direction is in the prevailing method --  
25 or in the prevailing direction as described and discussed

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1 here in the last several minutes. Will sulfur dioxide that  
2 vents through this building through this door have any way  
3 of entering the garage door that Mr. Newman says is open as  
4 indicated on Exhibit 73 by the circle that you have drawn or  
5 rather will it go through to that negative area?

6 A It's not either/or. There is tremendous  
7 diffusivity, there's boiling air, moving of air. As long as  
8 air is coming this way, you're going to have negative  
9 pressure. As there is negative pressure here, there will be  
10 a negative pressure shadow along -- probably pretty much  
11 following that axis. Within that shadow, for lack of a  
12 better term, there is going to be an invisible maelstrom of  
13 air moving around. Sometimes we have observed that pieces  
14 of paper will float up a wall. You are standing there in  
15 two corners of a building and a piece of paper -- or dust  
16 devil dance, going up and down, not going much of anywhere,  
17 sometimes slamming into a wall, sometimes settling down,  
18 sometimes being picked up and swept away. But in that  
19 shadow you have that turbulence, absolutely. There's no  
20 question in my mind that there can't be entry through an  
21 open door in that direction. There is nothing mysterious  
22 about it.

23 Q How about gas coming over around this corner  
24 and into a vent on this side of the building?

25 A It's unlikely. As long as you have got the

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1 ram effect here, assuming -- there were buildings there, but  
2 you still have air moving in this direction. It's unlikely  
3 that SO<sub>2</sub> gas molecules will get out of this and go this way.  
4 They will mostly be swept this way once they're in that  
5 negative air pocket in that corner.

6 Q Given the pressure that you've described on  
7 the side of the building here, would there be any reason for  
8 the sulfur dioxide to go through any of the holes in the  
9 wall that you described, the breaches in that wall between  
10 Building A and Building B, given the negative pressure  
11 system on the side of this plastic sheet or tent, as you  
12 call it?

13 A Well, I don't know about the rigidity of the  
14 plastic sheet. But if it's a billows effect, if it's a  
15 fairly windy day and you're getting a pulsating billows  
16 action, sure that could be squeezing past it through the  
17 holes. It's plausible. I don't know if it's --

18 Q Let me ask you to assume what we've got  
19 here -- if you assume this, that this wall that is marked  
20 17 feet and this wall that is marked 31 feet were comprised  
21 of a chain link fence to which was affixed that plastic  
22 sheeting, would that give you a rigidity that would preclude  
23 that billows action you were talking about? What does that  
24 do?

25 A I want to know how the plastic was attached

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1 to the chain link fence. You have either side, it can puff  
2 one way or the other. I'm just saying it's a possibility.  
3 I don't know how probable it is. It's something that should  
4 be considered.

5 Q What do you think is more likely?

6 A I don't know. You're trying to paint a  
7 picture and I'm not getting it. You can have a chain link  
8 fence and you can have plastic sheeting on one side or the  
9 other, and if it's not secured very well, it's on the top or  
10 the bottom, it can billow out and billow in.

11 Q Based upon what you know and your view of the  
12 records, do you think the sulfur dioxide is going to go out  
13 the door and into the Building B area via either the  
14 negative pressure envelope that you've drawn or do you think  
15 it's going to go through the holes in the wall? Which do  
16 you think is the more likely path?

17 A Well, you're asking me for either/or. It has  
18 to be one or the other. I don't think it's that simple. It  
19 could be all.

20 Q Which do you think would be the predominant  
21 one?

22 A I believe the predominant one would be  
23 through the back, the negative pressure on the back of the  
24 building. I should mention during my inspection that I saw  
25 three covers on the back of Building B that were not part of

131  
1 the original construction. These were scab plates maybe  
2 two feet long by a foot high fastened to the wall. So at  
3 one time there was a breach. Arguably, it could have been  
4 done last week, I don't know. But there were openings into  
5 that building. Who knows when and for what.

6 There are three -- assuming that the S02  
7 release was from Building A, at some point in Building A  
8 unknown or over which there's dispute, there are three  
9 avenues of entry, all plausible in my view and it's not  
10 either/or. If I were to rank them, I guess you'd ask me  
11 that, I shouldn't be volunteering anything.

12 MS. STORM: No, you shouldn't. Shut up.

13 A Shut up. I will not do that.

14 Q Let me ask you this. How would you rank  
15 them?

16 A What do you mean by ranking? Sorry. The  
17 back of the building, one; two in through the door; three,  
18 through the breaches of the wall.

19 MS. STORM: Doesn't that depend on where in tent  
20 A?

21 A Absolutely. To me, it's a black box.  
22 Somewhere in this black box it came out, and where it went  
23 from there.

24 (Break taken.)

25 BY MR. THOMAS:

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1 Q Sir, on page two of your report it says, "In  
2 summary, a reasonable degree of scientific certainty  
3 Mr. Newman's chronic lung disease is more likely than not  
4 attributed to his acute inhalation." What I want to know is  
5 are we talking scientific certainty or are we talking more  
6 likely than not?

7 A I'm not sure.

8 MS. STORM: Object to the foundation of the  
9 question.

10 A I don't understand the question.

11 Q Would you describe that you hold your  
12 opinions to a certainty or, as you use the phrase here, more  
13 likely than not?

14 A They are really synonymous. Certainty is a  
15 percentage, if you will. Somewhere between zero and a  
16 hundred.

17 Q What percentage would you say that is?

18 A More likely than not is 51 percent. I can't  
19 give you a specific percentage. Nobody can.

20 Q You can't define it more precisely than 51  
21 percent. But those terms, you intend them to be read  
22 synonymous?

23 A If you want me to guess, I would say it's  
24 closer to a hundred than 50, I will tell you that.

25 Q Are you saying it's a hundred? I'm asking

1 you the question.

2 A No, in this business there is no hundred  
3 percent in anything. Some things are: Gravity, taxes,  
4 death. But there is always some uncertainty, of course.

5 Q In your report you indicate that Mr. Newman  
6 was chronically ill afterwards. What is your understanding  
7 of what his condition is or was after March 1999?

8 A I understand he still has breathing  
9 difficulty. I don't know to what magnitude.

10 Q How do you have that understanding?

11 A I read Dr. Hirsh's report. Apparently he has  
12 atrial or ventricular fibrillation on a spasmodic basis. I  
13 don't know the degree. I'm not a cardiologist, of course,  
14 or physician. But it's my understanding he has medical  
15 problems attributed to his exposure.

16 Q Is it fair to say that you hadn't read that  
17 when you made your report on October 27, 2001, right?

18 A No, but Ms. Storm said that to me and I had  
19 no reason not to accept that on her word.

20 Q So Ms. Storm told you he was chronically ill?

21 A Yes, maybe not in those words, but that is  
22 the sense I got.

23 Q Ms. Storm's comments to you were the basis  
24 for your writing that particular point in your report?

25 A No, you're trying to mischaracterize.

1 Q I'm trying to understand, sir.

2 A She mentioned to me initially at the  
3 inception of this case that her client had health problems  
4 that weren't there. And I believe I probably asked her how  
5 is his health -- how is Mr. Newman's health prior to  
6 exposure -- and she gave me her opinion -- and how is it  
7 now. His health problems are ongoing. And down the road,  
8 more likely than not, she said she would be sending records  
9 to me for review in connection with that.

10 Q So would agree with me then that her  
11 information was the source of your statement on October 27  
12 that Mr. Newman was chronically ill afterwards?

13 A I believe it was at that time. I had records  
14 to review, of course. I can't sort out easily all the  
15 records I had up to pre-report and post-report. But I have  
16 a caveat in my report, should I be presented with things  
17 that fly-in-the-face of my opinions, I reserve my right to  
18 resurrect those opinions and modify them as appropriate.

19 Q Well, a couple hours ago we couldn't remember  
20 whether you had reviewed medical records or not. Has  
21 something happened since you made that statement?

22 A No, I really don't recall. I read medical  
23 reports. I guess in a way that is a medical record,  
24 specifically it probably is not a medical record, more  
25 likely than not would be laboratory test results, but it is

1 a matter of semantics.

2 Q You didn't read any medical reports prior to  
3 October 27, did you?

4 A I don't think so.

5 Q Now, you used the word "massive" a couple  
6 times in your report. I take it that that's just intended  
7 to mean 100 to 200 parts per million, right?

8 A Anything above that. Anything above an ideal  
9 H concentration is immediately dangerous to life and health.  
10 Is a thousand more massive than a hundred? Of course it is.  
11 It's an imprecise word, but I have a sense of what it means.

12 Q No, I just want to understand it. In  
13 paragraph five, page two, you talk about a collection of  
14 conditions: Irritations in the nostrils, pharynx, trachea,  
15 upper bronchi, rhinitis, dryness of the fluid, broncho spasm  
16 and coughing, broncho constriction, chemical broncho  
17 pneumonia, bronchiolitis obliterans, reactive pathways,  
18 reactive airways disease, high pitched rales?

19 MS. STORM: Could I just again correct the record?  
20 My March 28 letter to Mr. Wabeke in the file that you all  
21 reviewed indicated that I sent him copies of the medical  
22 records. And I also sent him copies of Rick's answers to  
23 interrogatories, which included some indication as to what  
24 his injuries were.

25 MR. SCOTT: I think one thing for the record, once

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1 Mr. Wabeke has a chance to take a look at his file here and  
2 back in Michigan, I would like a copy of the entire file and  
3 I think we shall mark it as exhibit to the deposition so  
4 there is no misunderstanding as to what the witness did  
5 review.

6 MR. THOMAS: Let's go ahead and do that.

7 (Off-the-record discussion.)

8 BY MR. THOMAS:

9 Q Your report indicates that Mr. Newman was  
10 trapped under the tank and unable to immediately escape.

11 A He was on his back. He was lying on his  
12 back, that to me indicates -- he's not physically trapped,  
13 he's not ensnared in something.

14 Q Is it fair to say from your looking at that  
15 tank today, being on your back underneath that tank, if  
16 indeed that is where he was, one can get off their back and  
17 get up and leave the area if one needs to?

18 A Well, he did that.

19 Q So being under there working, you wouldn't  
20 call that being trapped, correct?

21 A It protracts the exposure, absolutely.

22 Q Protracts the exposure in what sense?

23 A Duration.

24 Q By how long, how many --

25 A I don't know how many seconds. It's going to

1       protract it a little bit.

2                   Q     I guess that comes down to what we mean by  
3       immediately.

4                   A     I can't give you definition of immediately.  
5       We're talking microseconds.

6                   Q     Well, I guess my -- again, let me rephrase  
7       it. I guess I haven't made it clear. Mr. Newman's on his  
8       back by this tank. How much longer does it take him, how  
9       much time does it add to his exposure because he's lying on  
10      his back?

11                  MS. STORM: Can I interject an objection? I don't  
12      think that that accurately describes Mr. Newman's testimony.  
13      This is one of the problems with not having the transcript  
14      done. There are some other factors -- and again if you want  
15      me to send him out of the room, we can talk about it -- that  
16      you're not putting in the question.

17                  Q     Well, you have preserved your objection.

18                  MS. STORM: Then go ahead and answer if you can.

19                  Q     It's not -- he's had two conversations with  
20      Mr. Newman. Tell you what, you just explain to me paragraph  
21      seven, which is on -- the portion that I want is on page  
22      three of your report where it says, "Please note Mr. Newman  
23      was underneath the tank he was insulating and escape was not  
24      immediately possible." I, mean are you trying to suggest he  
25      was stuck there like in a confined space or anything like

1 that?

2 A No, no, I'm saying he can't bolt for the  
3 door. He's on his back and he has to get up. To get up,  
4 institutes a delay.

5 Q Okay.

6 A I don't know how long the delay is, a second.  
7 There is an exertional component to doing that. That means  
8 a second or a deeper breath. That is all part of the human  
9 factor elements in this situation.

10 Q We're not talking --

11 A He's not pinned to the wall.

12 Q Okay. Are you familiar with the Anderson  
13 study that looked at human response to controlled levels of  
14 sulfur dioxide in 1974?

15 A No.

16 Q Would you take --

17 A What was the journal?

18 Q If you were to -- if I were to suggest to you  
19 that they concluded that 25 parts per million of sulfur  
20 dioxide was what they described as intolerable on first  
21 contact, would you agree with that?

22 A With some people, perhaps most people, yes.

23 Q What is bronchiolitis obliterans? I  
24 apologize if I'm mispronouncing it.

25 A You said the Latin correctly. It's a medical

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1 condition in that the bronchioles, the internal airways that  
2 connect to the alveolar portion of the lung have been  
3 destroyed to the point that their elasticity is deeply  
4 affected and it tends to be a progressive condition that can  
5 lead to fibrosis in some cases. It is often terminal and  
6 fatal.

7 Q Are you supposing -- are you suggesting that  
8 Mr. Newman has that?

9 A No, I can't do that. I'm not a  
10 pulmonologist. I'm not a physician. Based upon my  
11 understanding of the inhalation toxicology of sulfur  
12 dioxide, I don't believe his dose was sufficiently high to  
13 induce that condition.

14 Q Likewise, he doesn't have chemical bronchial  
15 pneumonia?

16 A No, not today.

17 Q Did he ever?

18 A Well, it's unlikely. I don't know.

19 Q There is -- in paragraph nine of your report,  
20 there is a parenthetical reference Tab B io Per 1933. Can  
21 you tell me what that is?

22 A That's the author of a 1933 study that showed  
23 that for some reason they were able to measure or reasonably  
24 reconstruct an exposure to a human being to 3,000 parts per  
25 million of sulfur dioxide for five minutes that resulted in

1 that person or person's death.

2 Q All right. I understand that about the  
3 Shupe, but what is Tab Bio Per?

4 A That is the name of a person, probably  
5 Norwegian or sounds like a Scandinavian name. I don't know,  
6 that is the author.

7 Q That is the guy's name?

8 A Uh-huh.

9 Q Okay. It almost looked like a footnote.

10 A It does really, Bio Per, that is a person's  
11 name as in Shupe or Shupe Tab Bio Per. No, it's a person's  
12 name.

13 Q All right. In the report in your testimony  
14 here, you correct me if I'm wrong, but I think we've been  
15 talking about your opinion that he was exposed between 100  
16 and 200. And in some parts of your report it talks about  
17 between 100 and 300. Is there any basis for the 200 to 300?

18 A No.

19 Q Okay. So what I should be focusing on in  
20 your opinion is -- or your conclusion is the concentration  
21 is between 100 and 200 parts per million of sulfur dioxide  
22 for a duration of between one and two minutes?

23 A That's right.

24 Q Now, with respect to the requirements, the  
25 OSHA requirements that you cited in your report, is it fair

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1 to say that the threshold quantity for sulfur dioxide that  
2 triggers these requirements is a thousand pounds?

3 A No.

4 Q It's not true?

5 A No, those threshold quantities are based on  
6 protection of the community and not workers.

7 Q So it has no application whatsoever to  
8 workers?

9 A Well, it does in the sense that if you have  
10 sulfur dioxide on your premises and if you have a pound of  
11 it and if it's foreseeable that one pound of sulfur dioxide  
12 could put workers in harm's way, then there is a duty upon  
13 the employer and others. But if it's a thousand pounds that  
14 also implies the duty upon the employer for their employees  
15 and business invitees, but as well to the community.

16 Q If I have a tank of sulfur dioxide at a work  
17 site and all it is it's just being stored there, do the  
18 workers in the vicinity of that have to do the kinds of  
19 things that you've described in your report? Have  
20 self-contained breathing apparatus and pagers and police  
21 whistles and things of that nature if it is merely a tank  
22 there being used for storage?

23 A The tank of SO<sub>2</sub> would be a hazard: closed,  
24 opened or otherwise. It becomes a risk when there is an  
25 exposure. The employer has a duty to estimate the risk and

1 to project the exposures, and then implement a plan  
2 accordingly.

3 Q And I guess my question is if there is a tank  
4 there, it's in a tank, and there is no reason to suspect  
5 that the tank is flawed in any way that a leak might occur,  
6 do the employees have to -- that have to work in that  
7 vicinity or in adjacent buildings or rooms have to wear  
8 self-contained breathing apparatus?

9 A I think I know what you're getting at, Scott.  
10 The issue here is a what-if analysis. There are various  
11 types of analyses that have to be done. If it is  
12 foreseeable there could be a release -- and the duty is upon  
13 those who create the hazard. And this would be those who  
14 purchased or procured the sulfur dioxide. They have to go  
15 through a risk assessment and risk consequence and a risk  
16 management program to ensure that if there is a risk, if  
17 it's foreseeable that there is going to be a release, then  
18 they have to have a plan in place to protect. Now, that  
19 plan might include self-contained breathing apparatus, it  
20 might not; it depends.

21 Q With respect to the prospect that if there is  
22 a tank that is used for the storage and it's just -- it has  
23 got say 10 pounds of liquid sulfur dioxide in a tank, what  
24 are the risks of that causing a danger to workers in that  
25 environment when the tank is not used for any process?

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1 A Well, you are using terms that I use when I  
2 teach safety engineering, I want to make sure we're on the  
3 same wave length. Risk, danger, hazard do not equate.  
4 Sulfer dioxide is a hazard regardless of if it's in an open  
5 system, a closed tank. If it is on the moon it is a hazard  
6 because of its very natures. The risk comes as a result of  
7 exposure. The exposure can be one-third of an inhalation or  
8 it could be a room engulfed with clouds of sulfer dioxide  
9 that would be lethal to all of us. The risk is a function  
10 of the exposure to a hazard.

11 Q Freon is a hazard, right?

12 A That's right.

13 Q I have got freon in my refrigerator? Should  
14 I be wearing a self-contained breathing apparatus when I go  
15 get a glass of milk?

16 A If in your analysis as a safety engineer  
17 there could be an exposure, yes, or something. You need  
18 something to protect.

19 Q Okay.

20 A That requires the rigor and a robust analysis  
21 on those who create the hazard. It is that simple.

22 Q Does the fact that -- my understanding is  
23 sulfer dioxide is heavier than air?

24 A In its pure form it's a little over two times  
25 heavier than air, yes.

1 Q 2.25?

2 A That sounds right. 29 into 64.

3 Q Sorry?

4 A Divide 29 into 64 will give you a ball park  
5 idea.

6 Q Twenty-nine would be the atomic weight of  
7 atmospheric air?

8 A It's the apparent molecular weight of air.  
9 Air is a mixture of gases.

10 Q A bunch of stuff?

11 A It would be based on that combination of  
12 gasses of an apparent molecular weight of about 29.

13 Q And 64 is sulfur dioxide?

14 A Yes.

15 Q So the fact it is heavier than air, does that  
16 have any role whatsoever in the subject that we've been  
17 discussing here?

18 A Well, pure sulfur dioxide gas released say  
19 closed to the ground or floor level at a wall, for example,  
20 that has a breach in it, that can easily migrate through  
21 that breach. There would be mixing with air, then it  
22 becomes diluted. As it becomes more diluted, the effective  
23 specific gravity of the mixture becomes more air-like and  
24 less sulfur dioxide-like. In other words, you mix one part  
25 of sulfur dioxide gas, which is over two times heavier than

1 air with 99 parts air, the average, if you will, the  
2 specific gravity of the mixture is going to be more like air  
3 than sulfur dioxide. But it takes time for that to happen.  
4 So if we were to throw a cupful of sulfur dioxide on the  
5 floor in this room, it would evaporate very quickly, but it  
6 would hover at the floor a long period of time unless there  
7 was mixing and ventilation in this room, ventilation systems  
8 and people walking about moving their arms and legs. It  
9 takes time, but eventually those SO<sub>2</sub> molecules would mix  
10 throughout the entire air in this room and we would have an  
11 average concentration. That would take time.

12 Q So they are not like liquids in the sense  
13 that if I have water and kerosene and I put them in a jar  
14 and shake it up and put it on the desk and wait,  
15 eventually -- maybe it won't take that long, but the  
16 kerosene will be on the top?

17 A Very quickly.

18 Q And the water will be underneath because the  
19 kerosene is lighter than the water or less dense?

20 A That is right because those are incompatible  
21 materials. It's an organic material and an aqueous  
22 material, but gas molecules don't behave like that.

23 Q So they would mix and achieve equilibrium  
24 over some period of time?

25 A Right. But once mixed, the sulfur dioxide

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1 molecules aren't going to settle out of the air. The air  
2 molecules rise, but to get to that point takes time. There  
3 literally can be -- perhaps you have driven down the highway  
4 sometime and you see a layer of fog on the highway. Cars  
5 drive through and they start mixing it, but then it just  
6 sort of comes back in and stays there.

7 Q That's been known to happen in this area.

8 A That's right, but that is not uncommon. Then  
9 you get solar heating, you get more turbulence from  
10 vehicles, and 18-wheelers start to mix it up, but it takes  
11 time to get there. Once mixed, those water vapor molecules  
12 that are condensed in the fog become vapor molecules in the  
13 atmosphere. Until they come out as rain or snow, they will  
14 stay there.

15 Q And the factors that go into that are so  
16 complex that you're unable to articulate what -- how long it  
17 would take for that mixing to occur if the gas in room A or  
18 Building A got into room B or Building B as we're describing  
19 it?

20 A There might be some programs that one could  
21 use, but I've yet to see them applied to buildings. There  
22 are diffusion equations and mixing -- complex equations that  
23 can be used for predicting atmospheric concentrations  
24 outside of buildings, air pollution dispersion estimates.  
25 You can buy ten different sets of software and get ten types

1 of answers, but they don't apply to buildings.

2 Q Let me ask you this. When this sulfur  
3 dioxide gets released, and if it gets to Mr. Newman, it had  
4 to get there somehow, right?

5 A Yes.

6 Q You've given us a couple different paths that  
7 it could take. How long does it take to get there?

8 A You have asked that. I said I don't know, it  
9 depends on many variables, physical variables.

10 Q Is it something like -- is it do these  
11 molecules travel at the speed of light, at the speed of  
12 sound, at the speed of molasses in January to coin a phrase?

13 A The mixing of the SO<sub>2</sub> molecules or any  
14 molecules throughout air, such as the air in this room, is  
15 not based on their molecular speed. The predominant factor  
16 is one of turbulence of the air. That can be caused by  
17 biomechanical means, a fan, people walking by, plus thermal  
18 gradients from floor to ceiling. Those are the two major  
19 mixing forces, not their intermolecular speed, that has  
20 essentially no bearing on the migration. In other words, a  
21 sulfur dioxide molecule in this corner is not going to get  
22 to that corner by its speed as a molecule. It's going to  
23 get there because the air is starting to mix. And randomly,  
24 it could be anywhere for that matter. It doesn't have to go  
25 there. But if we have a cubic foot of sulfur dioxide gas in

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1 that corner and 99,999 cubic feet of pure air everywhere  
2 else, eventually that will mix in. It's like a cup of tea,  
3 you have got the concentrated tea in a bag and then it mixes  
4 and it's homogenous. It never settles out after that point.

5 Q You're unable to offer any prediction on how  
6 long that would take on this case?

7 A I can't do it on the back of an envelope. I  
8 wasn't asked to do that, nor do I think it's important  
9 personally.

10 Q And you're unable to give a ball park  
11 estimate?

12 A Because the variables that are necessary are  
13 wind velocity, wind direction, mechanical air handling  
14 system velocity and direction, pedestrian traffic, thermal  
15 gradients, and a whole host of other factors, turbulence  
16 factors within a building.

17 (Off-the-record discussion.)

18 A Which introduces, you know, if it is a valve  
19 and gas releases and there's a pressure, there is a momentum  
20 effect and a buoyancy effect of the gas that is released.

21 MR. SCOTT: How much of that was on the record?

22 THE COURT REPORTER: Only his answer was on the  
23 record.

24 MR. SCOTT: Can you read the question back to me?

25 (Off-the-record discussion.)

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1 MR. SCOTT: There's no question on the table so I  
2 move to strike any reference to a valve being open.

3 BY MR. THOMAS

4 Q Tell me what a time-weighted average is as it  
5 bears on the information in your report about OSHA  
6 requirements.

7 A I refer to time-weighted averages just to give  
8 Mrs. Storm a notion of what an eight-hour average exposure  
9 would be to a chemical or should be for a chemical. And I  
10 think I cite several of them: The NIOSH recommended  
11 time-weighted average limit, the American Industrial Hygiene,  
12 the American Conference of Governmental Industrial  
13 Hygienists recommended time-weighted average, and the OSHA  
14 regulated statutory time-weighted average. Very simply, the  
15 time-weighted average is traditionally based on an eight-hour  
16 work exposure. There are provisions for overtime, but to  
17 keep it simple, if all of us worked in an environment for  
18 four hours and our exposure to a gas was ten parts per  
19 million, and then for the next four hours we worked at an  
20 exposure to say 20 parts per million, our eight-hour  
21 time-weighted average exposure would be 15 parts per million.  
22 We had a lower exposure before lunch and a higher one after  
23 lunch, but on an eight-hour basis it averaged out to 15.

24 Q Let me ask you this. What's the eight  
25 hour -- say a person works for seven hours and 45 minutes

1 and has no exposure to sulfur dioxide. And for 15 minutes<sup>150</sup>  
2 they have an exposure of X, what's their --

3 A One would have to calculate it.

4 Q And how would that calculation be made?

5 A Well, essentially, eight hours is 480  
6 minutes. Seven hours and 45 minutes is four hundred what 30  
7 minutes, 420 minutes, right?

8 Q Seven hours is 420.

9 A 450 minutes. So you would take 450 minutes  
10 times zero in brackets plus 15 minutes times that exposure,  
11 X, add those two groups together and divide by 480 and that  
12 would give --

13 Q That would give you the time-weighted average?

14 A Yes. But having said that, I think it's  
15 important to understand with brief exposures to very high  
16 concentrations that simple formula is often not used.  
17 Arguably, one could have a time-weighted average exposure of  
18 carbon monoxide of 35 parts per million, which would be  
19 neither here nor there, say over a ten-hour work shift, but  
20 have a three-minute exposure to 10,000 parts per million  
21 which would kill the person. They would be dead in five  
22 minutes. So one has to consider the dose and dose response,  
23 so the numbers game can be quite misleading.

24 Q And that's why you presumably refer to the  
25 National Research Council's Emergency Exposure guidance

1 levels for different time frames? That kind of addresses  
2 the things you were talking about?

3 A Not exactly, but it addresses that issue.

4 Q Same concept?

5 A Same concept. We can run our finger through  
6 a flame and never burn it, but if we hold it there long  
7 enough the same temperature will burn our skin.

8 Q These levels are chosen with a view toward  
9 selecting a level of exposure such that they can prevent  
10 injury to workers, correct?

11 A Well, some of those limits are for the  
12 general public. Some are for workplace exposure. I should  
13 mention there is no one limit that is protected for  
14 everyone, based on individual responses -- reaction to  
15 chemicals. But these levels are selected to be, one,  
16 reasonably achievable and, two, would provide a great deal  
17 of protection for almost everybody. Not everybody, there  
18 would be a few who would be at risk.

19 Q All right. Let me -- I know some of these  
20 documents are -- I understand we're going to mark the entire  
21 file and mark that as Exhibit A to the deposition?

22 MR. SCOTT: Yes.

23 Q All right. I think it's safe that I'm going  
24 to refer to some documents from that soon-to-be-marked  
25 Deposition Exhibit A and I'll refer to them by date. If

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1 there is any question, it should be taken care of. There is  
2 a letter in the file that is dated March 28, 2000, from  
3 Ms. Storm to you thanking you for agreeing to assist  
4 Mr. Newman in this case. One of the things that it encloses  
5 is item number four which reads, "A memo, which is work  
6 product and confidential, setting forth our admittedly  
7 sketchy knowledge of the facts at this time." Please tell  
8 me what was in that memo.

9 A I don't remember.

10 Q Do you have a copy of that memo?

11 A Not here. Its in -- well, now two offices,  
12 yes, most likely. It's unlikely it is gone, destroyed or  
13 missing. It's in one of two offices, yes.

14 Q And do you recall how long that memo was?

15 A I'm sorry, I don't.

16 Q Do you recall anything about it that would  
17 help us?

18 A No, I mean, I'm just speaking in very general  
19 terms. The memo pretty much outlines my understanding of  
20 the issues. It might have raised some questions on my part,  
21 I don't know that it did.

22 MR. THOMAS: Off the record.

23 (Off-the-record discussion.)

24 Q There is a letter dated October 23, 2001,  
25 from Ms. Storm. Let me hand this to you and if you have

1 any --

2 A What would you like me to do with it?

3 Q Well, I'm going to ask you some questions  
4 about it, but I wanted to refresh your recollection before I  
5 did so. Can I take that back when you're ready?

6 A Sure.

7 Q All set? This letter as I said is dated  
8 October 23, 2001, which is four days before your report.  
9 Had you written anything prior to receiving this?

10 A No. I wrote my report that day or perhaps  
11 started the day before. Typically, the date that I mail the  
12 report is the date I complete it. And a report such as that  
13 is not a long -- it started that day.

14 Q Had you had any contact between March 28,  
15 2000, and October 23, 2001?

16 A With?

17 Q With Ms. Storm or as indicated in this letter  
18 Mr. Mark Arnzen?

19 A Mrs. Storm tried to contact me several times.  
20 I was out of the country and I was also traveling a lot on  
21 business and we had telephone problems, I mean, in both  
22 offices; it was horrid. So there was a hiatus for quite  
23 awhile in terms of contact. I can't say exactly what and  
24 when.

25 Q It appears just shortly before this letter

1       there was a telephone conference?

2                   A     Yes.

3                   Q     Probably that day or the day before or  
4       something of that nature?

5                   A     Yes.

6                   Q     Now, this appears to be some handwritten  
7       notes written on a report that was authored by John Kamiński  
8       on January 18, 2002. On the cover page of that there is  
9       some handwriting in blue ink and capital letters, generally  
10      speaking. Is that your handwriting, sir?

11                  A     Yes.

12                  Q     And can you tell us what -- can you read for  
13      us what this says?

14                  A     Sure. Certainly. I had some questions about  
15      his approach and his method and technique, I guess. The  
16      table in his report, table one was unclear to me. In a  
17      general sense, I could see where he was trying to go, but it  
18      raised more questions than it answered. My understanding is  
19      that Mr. Kamiński was calculating the average concentration  
20      of sulfur dioxide gas in room B based on various  
21      assumptions. I take considerable exception to that because  
22      an average concentration isn't the issue at hand here. It  
23      should be the concentration most likely present in the  
24      breathing zone of Mr. Newman.

25                       My second comment is the TLV preface, the

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1 introductory comments to the threshold limit values, which  
2 is rather lengthy in fine print. But every practicing  
3 industrial hygienist should understand that compliance with  
4 those threshold limit values must not be used as proof or  
5 disproof of an existing physical condition. It appears that  
6 Mr. Kaminski is attempting to demonstrate that or at least  
7 say because the exposures are less than the OSHA standard  
8 for sulfur dioxide, ergo -- admittedly I'm reading between  
9 the lines -- Mr. Newman should not be ill. I don't  
10 understand his calculations. They are bizarre. There's no  
11 method given on how he did it, so I'm really -- my hands are  
12 tied in that sense. Mr. Newman made no comment regarding --  
13 I'm sorry. Mr. Kaminski made no comment regarding the  
14 diagnosis of chemical pneumonitis. There might be a debate  
15 on that, but I'm surprised he made no mention of that.

16 Q Well, you're aware that just -- he's not a  
17 medical doctor either. But are you aware in the medical  
18 records that were sent to you there are opinions from  
19 pulmonary specialists who were unable to find any indication  
20 of pulmonary or respiratory problems?

21 A Oh, absolutely. No question.

22 Q You're aware of that?

23 A Absolutely, sure. And sure there could be a  
24 dispute on the medical.

25 Q But you're -- is there a reason why you

1 discount those kinds of statements?

2 A Well, the default position in this business  
3 is you assume the conditions are valid.

4 Q Professionally, you feel obliged to take  
5 everything that Mr. Newman says at face value?

6 A No, I don't, not at all. I take that in  
7 consideration of the information that I've been provided, my  
8 understanding of the toxicology and inhalation hazards  
9 associated with the chemical and the lack of an industrial  
10 hygiene program, the physical characteristics of the  
11 building, his premorbid condition, everything, all of those  
12 factors enter into it.

13 Q Well, you would agree with me that the  
14 absence of an industrial hygiene program has no bearing on  
15 the question of whether Mr. Newman for a fact inhaled sulfur  
16 dioxide on that day, correct?

17 A No, incorrect. The lack of an industrial  
18 hygiene program is why we're here.

19 Q Let me ask it to you this way. If I were at  
20 that location on March 17, 1999, and I later claimed to you  
21 that I had smelled sulfur dioxide and it made me cough and I  
22 told that to a doctor that I had smelled sulfur dioxide at  
23 work and I've had a bad cough since and as a result was  
24 diagnosed with chemical pneumonitis, is there any way you  
25 could discredit me or tell me that I did not inhale sulfur

1 di oxide?

2 MS. STORM: Objection to the form of the question.

3 Go ahead.

4 A Without knowing what the physician or  
5 physicians did with Mr. Newman or anybody else for that  
6 matter, I can't. That's all part of it. I don't think it's  
7 just based on hearsay. There has to be some suggestion of  
8 an exposure coupled with medical findings.

9 Q And I guess that's an alternate way of saying  
10 what I've asked you. What medical findings are you aware of  
11 that are not based upon Mr. Newman saying, "I inhaled sulfur  
12 di oxide?"

13 A I don't know what factors led to the  
14 diagnosis of chemical pneumonitis.

15 Q If you don't know, you don't know.

16 A I don't know, exactly.

17 Q Anything else you need to tell me about your  
18 notes there, there are some notes on some additional pages?

19 A I find it interesting that Mr. Kamiński just  
20 cites the OSHA standards and doesn't go to the standards of  
21 care as promulgated by the National Institute for  
22 Occupational Safety and Health and the American Conference  
23 of Governmental Industrial Hygienists, which really would be  
24 under the vanguard of knowledge about inhalation toxicity of  
25 sulfur di oxide, not OSHA.

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1 Q Would you agree with me that the NIOSH is a  
2 recommended standard?

3 A Yes.

4 Q All right. And as such, it does not have the  
5 force and effect that the OSHA requirement does?

6 A No, no. It's just the standard of care, that  
7 is all. It's the best evidence we have in my view going.  
8 It's the collective wisdom of toxicologists.

9 Q When you expressed your comments on the  
10 standard of care, would you agree with me that you're  
11 expressing a legal opinion?

12 A I don't know. My sense of a standard of care  
13 of industrial hygiene practices.

14 Q Let me see if I have any additional questions  
15 based on this. Let me hand you a letter dated February 26,  
16 2002, from Judy Stephano, who is listed here as secretary to  
17 Ms. Storm. Do you recall receiving this letter?

18 A Yes.

19 Q Would you read the first sentence of the  
20 second paragraph, please?

21 A "With regard to the picture that depicts  
22 Building A and Building B, Rick was working inside the right  
23 garage door. Exhibit PG-10 shows the soap holding tank  
24 which Rick was working on."

25 Q Thank you. Just the first sentence.

1 A Sorry.

2 Q Do you believe that the statement that you  
3 just read is consistent with what you talked about earlier  
4 when you related Mr. Newman's conversation about where he  
5 was located next to some wall?

6 A Well, my understanding is he was working at  
7 or about point N, and the right door -- as you're standing  
8 outside looking inside the building -- obviously the left  
9 inside the building, this door, the right door. The  
10 photograph was taken from outside looking at the building  
11 and that is the right door and that is the one he told me  
12 was open three to four feet across from his workstation.

13 Q And you confirmed this assumption on your  
14 part with Mr. Newman in your telephone conversation?

15 A He said so, yes.

16 Q You asked him specifically about working  
17 inside the right garage door?

18 A Well, as we talked yesterday, my recall is  
19 that one door was fully closed, one was partially open. It  
20 was the right -- in fact, he had to retrieve a sketch from  
21 his records.

22 Q All right. Would you agree with me, from the  
23 garage door to the back of the building is 50 feet?

24 A The dimensions are on one of these.  
25 Fifty feet sounds reasonably close.

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1 MR. THOMAS: All right. If I may be permitted to  
2 do so, I will turn the floor to my colleague while I review  
3 my notes if I can come back and ask questions.

4 MS. STORM: It depends on the time.

5 MR. THOMAS: Mindful that we're going to suspend  
6 if necessary to look at the deposition.

7 MS. STORM: Suspend to question him about the  
8 deposition, but that's it.

9 DIRECT EXAMINATION

10 BY MR. SCOTT

11 Q Mr. Wabeke, my name is Jack Scott. I  
12 represent Mesa, Inc. I'm going to jump around a little bit.  
13 I won't be as long, but my notes are a little bit  
14 disoriented after three or four hours, so you will bear with  
15 me I hope. Your organization, Chemical Risk Management, is  
16 that a dba of yours or is that a separate entity?

17 A Dba.

18 Q You have three forensic professionals with  
19 Chemical Risk including yourself; is that correct?

20 A They are -- well, it was through that project  
21 with Karmanos Cancer Institute, the industrial hygienists.  
22 That project is winding down; it's really one person  
23 part-time now and they focus entirely on prostate cancer.

24 Q Are you the only person with Chemical Risk  
25 that provides forensic services?

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1 A Yes.

2 Q Have you ever consulted previously either for  
3 or against Procter & Gamble?

4 A No.

5 Q Ever been involved in a litigation as an  
6 expert witness for or against Procter & Gamble?

7 A No.

8 Q You talked about the different titles that  
9 Mr. Thomas was reading off as far as Wayne State. You are  
10 in which department again?

11 A The Department of Family Medicine in the  
12 School of Medicine.

13 Q So there are physicians, I would take it, in  
14 your department?

15 A Yes.

16 Q Okay. Is yours a tenured position with the  
17 University?

18 A No, I'm adjunct, which means part-time.

19 Q Okay. Are there any other industrial  
20 hygienists in that department at Wayne State?

21 A No, there are industrial hygienists for the  
22 University, but not in the department, not in our department  
23 I'm in.

24 Q We talked earlier -- or you talked earlier  
25 about it seemed like chemical exposure issues with respect

1 to Mr. Newman. What is your understanding as to his basic<sup>162</sup>  
2 or core, if there is one, diagnosis from a pulmonary aspect?

3 A I don't know. There is a restrictive  
4 component and apparently an obstructive component to his  
5 pulmonary capacity. I don't know how much of which or where  
6 the crossover becomes.

7 Q The primary diagnosis to your knowledge  
8 though is chemical pneumonitis; is that correct?

9 A That is what prompted him to seek medical  
10 care initially.

11 Q Does chemical pneumonitis -- if this is  
12 outside of your bailiwick and experience, let me know -- is  
13 that only a product of some type of an exposure -- of  
14 exposure to a toxic substance or can it be caused by other  
15 causes besides exposure?

16 A No, strictly the definition is inflammation  
17 of the lungs due to chemical inhalation or arguably an  
18 aspiration, vomiting where chemicals are entering the  
19 respiratory tract.

20 Q But it entails necessarily some type of  
21 exposure; is that correct?

22 A Yes.

23 Q There was some discussion -- and if you have  
24 your report in front of you, on top of page two if you  
25 would. If you recall, Mr. Thomas was asking you for what

1 I'll call the layman's terms for the words "precedent  
2 respiratory morbidity," which I think you equate to lung  
3 disease; is that correct?

4 A Yes.

5 Q There was discussion about no apparent risk  
6 factors for pulmonary irritant lung disease. And at one  
7 time I heard you answering in terms of those factors being  
8 related to the agent, the concentration, and the duration.  
9 At an earlier point I thought you said that those type of  
10 risk factors might be emphysema, fibrosis, asthma; do you  
11 remember?

12 A Yes, and I can see where there is confusion.

13 Q What do you consider risk factors for  
14 pulmonary irritant lung disease as you mentioned in your  
15 report?

16 A Well, they can be combinations of two major  
17 categories and that is where I think there is some  
18 misunderstanding. Risk factors clearly can be the chemical  
19 agent or arguably biological agent or agents. Two, the  
20 concentration in the inhaled air. Three, the duration of  
21 the exposure. Four, the respiratory rate. Those are some  
22 of the major ones. Then there is another group that would  
23 be the unique biological setting that that person brings to  
24 the table.

25 Q Emphysema, fibrosis, asthma?

1                   A     It might be an enzyme deficiency, it might be<sup>164</sup>  
2     whatever. It might be superimposed upon a cold, influenza,  
3     whatever. So there are really two sets of risk factors.  
4     What I was referring to here, nothing in the record  
5     suggested that he had some biological risk factors that  
6     predisposed him to a chemical pneumonitis. I can see where  
7     there is confusion on that.

8                   Q     In your opinion, are the biological risk  
9     factors limited to his medical profile or do they also  
10    include any genetic disposition that may or may not exist?

11                  A     It could be both, absolutely. There has been  
12    research on sulfur dioxide just that very thing, but it's --  
13    it's a difficult thing to deal with, quite frankly. There's  
14    more questions than answers. There is enough in eyes of  
15    certain investigator that SO<sub>2</sub> can be a -- SO<sub>2</sub> injuries can  
16    be precipitated based on certain enzymatic and biochemical  
17    deviations from perhaps other people.

18                  Q     What is your understanding of fibrosis?

19                  A     That is a general term for scar tissue  
20    formation in living tissue.

21                  Q     Do you have any understanding as an  
22    industrial hygienist as to causes from an occupational point  
23    of view of any of fibrosis?

24                  A     There can be several. Mineral dust, such as  
25    silica, asbestos; metals such as beryllium; and irritants,

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1 irritant gasses and vapors. So in some people there is some  
2 agents such as crystalline quartz in silica that are  
3 notorious for causing pulmonary fibrosis in exposed workers  
4 with a sufficient dose, generally years of high dust  
5 concentrations. There are other agents that induce  
6 pulmonary fibrosis that the mechanisms are not clearly  
7 understood, occur in some people not in others for whatever  
8 reasons. We don't know.

9 Q In your practice and experience as an  
10 industrial hygienist, can exposure to fiberglass have an  
11 impact or be correlated to fibrosis?

12 A I'll answer that. It wouldn't surprise me  
13 down the road if we find that. I haven't seen compelling  
14 evidence to this point to support that notion. It's like  
15 asbestos. We're learning as we go along; that's pretty  
16 clear.

17 MS. STORM: Let's not open up that litigation.

18 A But I think the jury is still out on man-made  
19 mineral fibers such as fiberglass.

20 Q If I'm hearing you correct, you're suggesting  
21 that the jury is out, but that there is possibly some  
22 literature or thought in the scientific arena that there may  
23 be or is a correlation; is that a fair statement?

24 A There is some thought in that regard, yes.

25 Q Do you have any understanding as to

1 Mr. Newman's work history in terms of whether he was  
2 involved in the use fiberglass products?

3 A No, as an insulator it wouldn't surprise me.

4 Q Are you aware he was insulating at the time  
5 of this incident?

6 A Yes, and using fiberglass, right.

7 Q Do you have any understanding as to the type  
8 of adhesives that Mr. Newman used as part of his insulating  
9 responsibility?

10 A Not at this particular site. I know the  
11 types of adhesives that are used to adhere fiberglass batts  
12 to various pieces of equipment.

13 Q What is your understanding of those types of  
14 adhesives?

15 A There's acrylic resins, epoxy resins, thermal  
16 stable resins with what we call a poly-added base,  
17 especially in hot processes that might cause delamination of  
18 material.

19 Q Have you ever heard of a product called  
20 Armstrong 520?

21 A I know of Armstrong adhesive, the 520 doesn't  
22 mean anything to me.

23 Q Do you know if any of the products he used  
24 had a specific material safety data sheets assigned to those  
25 products.

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1 A It wouldn't surprise me. I don't know that.

2 Q I saw in your CV -- bear with me one second.

3 A Sure.

4 Q You were involved in a case in Escanaba,  
5 Michigan, involving epoxy in TDI occupational asthma. Do  
6 you remember that case at all?

7 A Very well.

8 Q What is TDI occupational asthma?

9 A TDI is an abbreviation for Toluene  
10 Diisocyanate, it's one of the two ingredients that is used  
11 in polyurethane products, foams. The cushions -- the seat  
12 cushions we're sitting on most likely are polyurethane.

13 Q That case apparently involved some type of  
14 epoxy; is that correct?

15 A Epoxy paints, yes.

16 Q They were paints? While I have your CV out,  
17 what is MDI hypersensitivity pneumonitis?

18 A MDI is an abbreviation for another  
19 isocyanate -- don't throw anything at me reporter --  
20 methylene phenyl diisocyanate.

21 Q Does your practice as an industrial hygienist  
22 include consulting with any fiberglass companies concerning  
23 either the risk of inhalation of fiberglass products or  
24 epoxy adhesives?

25 A I personally and through those I supervise

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1 have done a lot -- I say a lot, probably 20 industrial  
2 hygiene studies of workers' exposure to fiberglass, almost  
3 exclusively at Ford Motor Company. And in the process there  
4 would have been occasions to contact Owen's Corning, various  
5 material suppliers for their input on the hazards of their  
6 product, to get their advise to help us solve some problems.  
7 The big problem we had was fiberglass itch, it's a rather  
8 disabling dermatitis the first week of exposure.

9 Q To anyone who's ever insulated their attic,  
10 correct?

11 A You got it.

12 Q Are there any pulmonary deficits or irritants  
13 or conditions that can result in your professional  
14 experience from the use of fiberglass products first?

15 A Well, the fiberglass products -- and this goes  
16 goes back several years, it's not a recent issue with me.  
17 We were looking at particles that were a little too large.  
18 They could do a number on the skin. But they really weren't  
19 of an aerodynamic diameter that couldn't penetrate deep into  
20 the lungs.

21 Q These were studies that you were doing  
22 yourself?

23 A Yes.

24 Q Was that at Wayne State?

25 A No, Ford Motor Company. Workers in car and

1 truck assembly plants installing insulation, perhaps  
2 underneath the floor mat or in the trunk or in the trunk  
3 engine compartment as sound deadeners.

4 Q Do you have any understanding as to any  
5 pulmonary risks associated with the adhesives that are used  
6 in the fiberglass insulation business?

7 A There are many, many types of adhesive. I  
8 really have to know the specific kinds.

9 Q Armstrong 520?

10 A I don't know what is in 520. The adhesives  
11 as a class are not volatile. Even if they are sprayed, they  
12 are not going to come out as a respirable mist, but the  
13 solvents that are present in some adhesives can be  
14 problematic.

15 Q Did you discuss the use of the adhesives with  
16 Mr. Newman at any time?

17 A No.

18 Q Do you consider them significant in  
19 formulating your opinions to have any understanding as to  
20 the type of adhesives that he was using day-to-day in terms  
21 of his insulating requirements?

22 A No.

23 Q Why is that?

24 A I don't think -- there was nothing really  
25 dramatic in his work environment that even suggested that he

1 had significant exposure to adhesives or solvent vapors  
2 coming from adhesives.

3 Q Are you aware that he used any type of  
4 protective breathing gear?

5 A No.

6 Q Did you ask him that by chance?

7 A I did not.

8 Q In your report, page two, the final sentence  
9 of paragraph one reads "Other workers present at the site  
10 also inhaled SO2." First, can you tell me the source of  
11 that statement, sir?

12 A There is a statement somewhere in my  
13 documents, somewhere in that stack -- I don't recall the  
14 gentleman's name, but he described it.

15 Q Do you have any understanding as to whether  
16 there were any other workers present that you referred to  
17 that had any long-term or chronic sequelae?

18 A It's my understanding no one else has, other  
19 than Mr. Newman, to the extent that anybody knows.

20 Q Do you have any understanding as to where  
21 those other workers were physically located in the  
22 structures, that's what we'll call it today.

23 A No, I don't.

24 Q I note that a lot of your opinions talk about  
25 what appear to me to be pulmonary conditions. Is that a

1 kind of a fair and obvious statement?

2 A Yes.

3 Q For instance, number two of your findings or  
4 opinions at page two reads, "His pulmonary injuries are  
5 consistent with a massive acute exposure of SO<sub>2</sub> gas." I did  
6 not see any reference in the report to any of Mr. Newman's  
7 alleged cardiac conditions. Am I correct that that aspect  
8 of the case is not addressed in your report?

9 A It is not, that's right.

10 Q Before you received Dr. Hirsh's deposition  
11 transcript, did you have any understanding as to whether  
12 Mr. Newman had any cardiac symptoms that were allegedly as a  
13 result of this incident?

14 A Nothing comes to mind.

15 Q Whether as an industrial hygienist or  
16 whatever other discipline that you've engaged in, do you  
17 have any particular expertise in regard to cardiac sequelae  
18 from inhalation of SO<sub>2</sub>, as opposed to pulmonary conditions  
19 that you have outlined in this report?

20 A Well, I'm not aware personally of any  
21 firsthand evidence that exposure to SO<sub>2</sub> causes cardiac  
22 problems. But having said that, the heart and lungs are  
23 really a cohesive network of machinery and, obviously,  
24 independently intertwined in their function. Myocardium is  
25 the most oxygen-demanding muscle we have and it gets it from

1 the lungs. They work very closely together. It wouldn't<sup>172</sup>  
2 surprised me in an impaired pulmonary system --

3 MR. THOMAS: I'm going to object to continued  
4 medical opinions. Go ahead.

5 MR. SCOTT: Keep going.

6 A There are medical conditions that effect the  
7 heart -- that effect the lungs that can effect the heart.  
8 You alluded to one earlier, fibrosis can produce right heart  
9 failure to the point of death and congestive failure. There  
10 are numerous conditions, but I'm not here to render an  
11 opinion regarding atrial or ventricular fibrillation as a  
12 sequela from SO2, that is not my area of expertise.

13 Q And I recognize that you're not offering  
14 medical opinions, but I noted, for instance, opinion five  
15 where you talked about conditions that may develop and they  
16 all appear to me, to me anyway, of a pulmonary nature:  
17 Chemical broncho pneumonia, bronchiolitis obliterans,  
18 reactive airways disease. Those appear to be classic  
19 pulmonary conditions?

20 A That's a fair statement.

21 Q I gather, even though you're not offering  
22 medical opinions, you're aware of these conditions as being  
23 part of the literature or the understanding that things can  
24 emanate from SO2 exposure; is that a fair statement?

25 A That's right. As an occupational

1 toxicologist I teach doctors, not the clinical aspects, but<sup>173</sup>  
2 what chemical can cause what types of health problems in  
3 what types of workers under what conditions. That is part  
4 of my function as a faculty member at the University.

5 Q And I'm intrigued by what is not listed in  
6 number five as much as what's in there; namely, the fact  
7 that I don't see any mention of arrhythmia, atrial  
8 fibrillation. The fact that you've mention pulmonary  
9 conditions, is that significant in terms of what is out  
10 there in the literature or in the general knowledge of what  
11 S02 exposure can do?

12 A Those are the generally recognized effects of  
13 excessive exposure to S02. A physician trained not even in  
14 cardiology, just in primary care medicine should be able to  
15 make a leap from impaired pulmonary function can lead to  
16 impaired cardiac function.

17 Q You would recognize and agree that despite  
18 the fact, or other than the fact you're not offering medical  
19 opinions, you agree with me that certainly there is a  
20 separate medical discipline for pulmonologists versus  
21 cardiologists, correct?

22 A Well, there are cross-overs too like  
23 interventional cardiologists. But, yes, in general that is  
24 correct.

25 Q Can you point me to any treatises or

1 literature that you are aware of that correlate SO<sub>2</sub> exposure  
2 to subsequent cardiac sequelae?

3 A No, I haven't researched that.

4 Q You've spent a considerable amount of time  
5 talking about the words massive acute exposure and  
6 Mr. Thomas was asking you specific questions about parts per  
7 million. And I remember at one time I think you said what  
8 do you want, one bullet or ten bullets. Do you remember  
9 when you said that?

10 A Yes.

11 Q It's fair to say that your figure of 100 to  
12 200 parts per million is not based upon any scientific  
13 quantitative study. It's your best estimate based upon what  
14 you have gleaned from the subsequent condition or conditions  
15 that Mr. Newman has presented with; is that a fair  
16 statement?

17 A Well, it's based on a lot of experience, sir.  
18 I've been around the block a few times on sulfur dioxide in  
19 a variety of occupational environmental settings. I know  
20 the dynamics of the gas; that is all part of my  
21 understanding, that is what I bring to this table.

22 Q And I don't doubt that. I don't want you to  
23 think for a minute that I'm denigrating your ability at all.  
24 But it seems important to me anyway that if NIOSH or OSHA or  
25 whomever lists threshold levels as five parts per million,

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1 one part per million or a 1,000 or 3,000 being fatal, that  
2 there would be some recognized quantitative numbers out  
3 there that say at this level you're looking at this type of  
4 damage and so forth. That is how I'm seeing this. Is that  
5 not accurate?

6 A It's accurate to a point. These numbers are  
7 obtained from a variety of sources. One, in the case of two  
8 that I cited here, people died and for whatever reason air  
9 samples were taken at the same time or there was a  
10 replication in a laboratory controlled setting. Two, animal  
11 evidence. Rats and mice for the most part, we exposed them  
12 and we can project somewhat. And then air samples taken at  
13 the time people are exposed. Are eyes watering? Are people  
14 coughing? Are they choking? Can you smell? Can you  
15 detect? At the same time air samples are being taken. All  
16 that is part of the corpus of knowledge that arise at these  
17 limits.

18 Q And you mentioned Ford situations where you  
19 knew you were looking at a massive exposure and there was no  
20 point in calculating the parts per million released,  
21 correct?

22 A Correct.

23 Q But when you have a situation like this case  
24 where you admittedly relied heavily on what I'll call the  
25 correlating conditions in terms of his physical symptoms,

1 isn't that all the more important that we obtain some  
2 understanding as to what the level of the parts per million  
3 discharged that day?

4 A If that can be done it would be helpful, yes.

5 Q Mr. Thomas also asked you about opinion  
6 number seven at the top of page three and the use of the  
7 word "trap" and you clarified quickly that you're not  
8 stating that Mr. Newman was quote/unquote trapped. I  
9 recognize what you're saying there. Similarly, if you look  
10 at opinion number ten it reads, "I believe that Mr. Newman  
11 was exposed to an SO<sub>2</sub> gas concentration exceeding 100 parts  
12 per million and most likely to about 100 to 300 parts per  
13 million for one to two minutes until he could extricate  
14 himself." First of all, the 300 should be 200, correct?

15 A It could be 300. Frankly, I don't have a  
16 number. Nobody does. If anybody does, they are a fool,  
17 frankly. We'll take it from there.

18 Q When you wrote for one to two minutes until  
19 he could extricate himself. The word "until" does not mean  
20 to suggest in your opinion that it took him one to two  
21 minutes to extricate him from being underneath the tank; is  
22 that accurate statement?

23 A That's right.

24 Q The phrase one to two minutes is your opinion  
25 as to the length of time that he was exposed to the SO<sub>2</sub> at

1       whatever level, correct?

2                   A     Well, yes, the time that he said is it  
3       something that we should abandoned the building, should I  
4       get out of here, to get up off the floor gather himself and  
5       leave the building, yes. There was dispute whether it was a  
6       situation that would require evacuation, at least that is my  
7       understanding.

8                   Q     Do you have an opinion as to how long it took  
9       Mr. Newman to first detect the presence of SO<sub>2</sub>? And,  
10      secondly, how long it took him to recognize the SO<sub>2</sub>?

11                  A     I don't think Mr. Newman knew what SO<sub>2</sub> was.  
12      I don't think he had a clue. I don't think he ever  
13      recognized SO<sub>2</sub> -- this clearly is sulfur dioxide. He had no  
14      idea.

15                  Q     Well, you mentioned that with your own  
16      personal surgery that you have a limited olfactory sense.  
17      Do you have any understanding that Mr. Newman's olfactory  
18      sense is impaired?

19                  A     No.

20                  Q     Does not SO<sub>2</sub> for the majority of the populous  
21      have a pungent egg-like odor immediately or --

22                  A     I wouldn't call it an egg-like. It's not so  
23      much of an odor as an irritation as the formation of  
24      sulfurous acids in the mucous membranes. There's an odor  
25      element to it, but not like hydrogen sulfide or rotten eggs.

1 Q Let me ask it a different way. Perhaps  
2 Mr. Newman didn't know this was SO<sub>2</sub>, I will accept your  
3 premise and go from there for a second. Do you have an  
4 opinion of how long before he recognized that there was some  
5 type of chemical substance in the air that is not typical  
6 for him to be experiencing at P&G?

7 A I asked him that several times and it wasn't  
8 clear. There was no suddenly there's an awakening. He  
9 wasn't certain.

10 Q So I take it from your answer that you didn't  
11 glean from talking to him his point of detection nor his  
12 point of recognition; is that a fair statement?

13 A The stop watch wasn't started.

14 Q Mr. Thomas asked you about the Anderson study  
15 from 1974 and I think you said you weren't familiar with  
16 that; is that correct?

17 A What journal is it in? Perhaps I read it  
18 years ago. I read a lot of journals.

19 Q It's referred to in Mr. Kaminski's report.

20 A If it's in a journal that crossed my desk at  
21 the time, I read it.

22 Q The human response to controlled levels of  
23 sulfur dioxide, ARCH. Environmental help by Lingquist and  
24 Jensen?

25 A No, I have to know the journal; that tells me

1 more than anything.

2 Q Well, Mr. Kaminski is apparently quoting in a  
3 footnote that, as Mr. Thomas asked earlier, detection odor  
4 threshold for sulfur dioxide is .33 parts per million. And  
5 I think your response for that was it depends on the  
6 individual; is that an accurate recitation of your answer?

7 A It does. Mr. Kaminski is citing one study.  
8 The book I pulled out of my briefcase is a review of all the  
9 studies. And most likely, since that is the lowest reported  
10 concentration of .33, I would be surprised if that .33 isn't  
11 the same reference point as in this book that I have, but it  
12 is the lowest one.

13 Q Even if it's the lowest, it strikes me when I  
14 look at that .33 detection and the other citations to the  
15 same study indicating a distinct odor of sulfur dioxide is  
16 detected by humans at one part per million, the figures that  
17 you're talking about as far as the most likely extent or  
18 level of the release are a hundred to 300 times the minimal  
19 detection levels; is that accurate?

20 A That's accurate, that is my call on it, yes.  
21 Mr. Kaminski just cites the lowest standards he ever came  
22 across. I would like to suggest that I shared with you the  
23 collective knowledge regarding this and it's quite a range,  
24 not the lowest end.

25 Q It's been a long day, I apologize. What were

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1 the numbers you were quoting as far as the -- what you  
2 consider to be a recognized range, first, for detection and,  
3 secondly, for the distinct odor being?

4 MS. STORM: Do you want to just mark the table?

5 A Do you want just the page?

6 MS. STORM: Is the page all right?

7 Q Absolutely.

8 MS. STORM: Do you want to read it to him and then  
9 I'll make a copy?

10 A Sure. The range for detection -- by the way,  
11 this group of industrial hygienists who researched the  
12 literature came across a lot of articles, some they said  
13 essentially were so scientifically poor they didn't cite  
14 them. They took best which they felt had scientific merit  
15 and cited those. For sulfur dioxide, for detection .33 to  
16 5.0 parts per million. For recognition, 3.8 to 5.0 parts  
17 per million. And for each of those detections -- the  
18 geometric mean was 2.7 parts per million. And the geometric  
19 mean for recognition was 4.4, which means on a geometric log  
20 scale 50 percent of the people detected it below 2.7 and  
21 50 percent above. And there can be tremendous extremes,  
22 especially since there is a log normal distribution. You  
23 can have some people who say why are all these people  
24 coughing and choking and saying it smells. I see these  
25 people in my business all the time.

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1 Q Mr. Wabeke, I wanted to take highest number  
2 and I want to assume they're correct, let's go with five  
3 parts per million. The level that -- to your best belief  
4 that Mr. Newman was exposed, if we go a hundred parts per  
5 million, we're at 20 times that number. If we go to 300,  
6 we're 60 times that number. My question, not as an  
7 industrial hygienist, but as a lay person who struggled  
8 through chemistry in high school, isn't this an overpowering  
9 smell at the levels that you're quoting when Mr. Newman  
10 detects it, if in fact that is the numbers that were  
11 present?

12 A Absolutely, that is why he was injured. He  
13 got out of the building.

14 Q But it took him a minute to two minutes to  
15 get to that appreciation at those levels and get out of the  
16 building?

17 A Based on everything, yes.

18 Q Did you go through with him in detail what he  
19 did for that minute to two minutes; namely, at what point  
20 was he looking around trying to figure out what was going on  
21 and at what point was he actually trying to get out from the  
22 tank and get out?

23 A I asked him to describe what he was doing, it  
24 was over -- telephonic at best. I didn't have a movie of it  
25 or a video of it, but that is what he said and I had no

1 reason to dispute it. He was consistent.

2 Q Did you have any general understanding as to  
3 whether he spent more time of that one to two minutes  
4 getting out from underneath the tank or more time once out  
5 of the tank heading out of the building?

6 A I don't know. The sense I had was there was  
7 a lot of debate on whether we should evacuate or not, but I  
8 don't have a clear understanding.

9 Q Mr. Thomas may have asked this and I may have  
10 missed it earlier. Did you have a discussion at any time  
11 with Mr. Newman about any buzzers or alarms or anything  
12 going off unusual at or about the time of the S02 incident?

13 A Initially, it was my erroneous belief that  
14 there was a gas alarm system, when, in fact, the enunciator  
15 of the alarm or whatever it was was a paging system.

16 Q First, how did you get misapprehension?  
17 Where did that come from?

18 A I don't know. It's not unusual to have gas  
19 alarms in situations where there can be a release of a gas  
20 under pressure or a liquified under pressure or a gas under  
21 pressure to serve as an alert system to those who might be  
22 exposed. What do we do; we have to get out; this is our  
23 path, whatever.

24 Q How did you come to acquire additional  
25 information?

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1 A I learned that there were garbled messages  
2 over this PA system and it wasn't intelligible.

3 Q Where did that information come in?

4 A Mrs. Storm and Mr. Newman.

5 Q Did Mr. Newman tell you he ever heard a sound  
6 like that before when he was on site at P&G?

7 A At a previous site visit?

8 Q For any reason at all.

9 A I certainly don't remember.

10 Q And you have no notes from either telephone  
11 conversations with Mr. Newman; is that correct?

12 A That's correct.

13 Q No tape recording?

14 A No, I don't do business that way.

15 Q You talked earlier about the issue of fans.  
16 First of all, would you agree that in determining the extent  
17 of exposure that the level or extent of natural ventilation  
18 and mechanical ventilation is important for you as an  
19 industrial hygienist to be aware of?

20 A More important is mechanical, but sometimes I  
21 consider natural ventilation, depending.

22 Q And I think you said initially that  
23 Mr. Newman told you that there was no fan in the area where  
24 he was working. Did I hear you correctly?

25 A If I said that, I misspoke. I asked him was

1 the fan on the outside wall adjacent to his workstation  
2 operating and he said no.

3 Q I thought what I heard you say is that in the  
4 first conversation there was no fan and yesterday he told  
5 you that that fan was not operating. So your testimony is  
6 he told you that there was a fan, but that it was not  
7 operating?

8 A Yes.

9 Q Okay. And is that something he volunteered  
10 or something you asked him?

11 A I asked him about ventilation in the area,  
12 mechanical ventilation.

13 Q Did he say anything else about any other  
14 exhaust fans in the area of where he was working that may or  
15 may not have been operational?

16 A No.

17 Q You're aware from any of the numerous  
18 diagrams that we've looked at, including Exhibit 73, that  
19 there are two fans depicted at least on the diagram on that  
20 wall?

21 A Yes.

22 Q Do you have any understanding as to whether  
23 either of the fans were operating at the time of the  
24 incident?

25 A I don't know.

1 Q You do not know how the S02 exposure  
2 occurred; is that correct?

3 A I believe it entered his work area through  
4 one or all three mechanisms I explained before.

5 Q I'm sorry, I meant to ask you or I was trying  
6 to ask you, you don't know how the S02 was released?

7 A No, I don't.

8 Q Have you been asked to perform any  
9 investigation as to that aspect of this case?

10 A No.

11 Q Do you have any knowledge as to what if any  
12 involvement Mesa, Inc., had with the release of S02 on the  
13 day of the incident?

14 A No, I know there is dispute over what might  
15 have happened, but that's why we're here I guess.

16 Q Did Mr. Newman tell you anything about that?

17 A No.

18 Q Have you ever spoken with any employees of  
19 Mesa, Inc., concerning this incident?

20 A No.

21 Q You talked earlier about -- and drew for  
22 Mr. Thomas -- the windward leeward side in terms of your  
23 explanation for the dissertation and the movement of the  
24 S02, correct?

25 A Yes.

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1 Q I did not notice that in terms of any part of  
2 the written report. Am I correct that it was not addressed  
3 in your written report?

4 A You're correct, it was not.

5 Q When did you come up with or develop those  
6 opinions concerning air flow and dissipation of SO2 outside  
7 the building?

8 A I believe I had an earlier document that  
9 showed wind flow and maybe someone somewhere on one of the  
10 documents I had had an educated guess on the direction of  
11 air flow or wind and it would have been at or about the time  
12 I reviewed that. It was fortified today when I saw other  
13 buildings in the terrain and surrounding structures, and, in  
14 fact, being there on a day when the wind direction was  
15 almost identical as to what was portrayed earlier in the  
16 diagram.

17 Q What is a fault tree analysis?

18 A It's one of several processes wherein  
19 somebody can sit down and ask what could go wrong with a  
20 system, how might the system fail in a predictive sense.  
21 Well, it can be done both ways. We can do it post injury,  
22 post event, whatever, or pre-event in terms of predicting  
23 what could go wrong, where might a system fail due to its  
24 components, due to its entirety, with an eye toward  
25 prevention. It involves a series of yes or no decisions and

1 other decisions that might require further information  
2 gathering.

3 Q Mr. Wabeke, do you have any opinions  
4 concerning anything that Mr. Newman's employer did or did  
5 not do relative to his safety and protection on the day of  
6 the incident?

7 A No, I don't think they had a clue regarding  
8 the hazards of this gas.

9 Q But you have not interviewed anyone with Vi ox  
10 owner Mr. Newman; is that correct?

11 A That's correct.

12 MR. SCOTT: Those are all the questions I have.  
13 Thank you, sir.

14 MR. THOMAS: I have a couple follow-up.

15 RE-DIRECT EXAMINATION

16 BY MR. THOMAS

17 Q "It could be 300. I don't have a number.  
18 Anybody who does is a fool." You said that a few moments  
19 ago and it made me wonder why we spent three hours  
20 discussing the numbers 100 to 300?

21 A Those are estimates. It's a range. If  
22 anybody wants 307 parts per million, I think it's absurd to  
23 even think it could be that precise, given the variables  
24 involved. Everybody has been looking for a specific number  
25 from me and the suggestion if you don't have a specific

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1 number I'm blowing air out of the top of my hat, that's not  
2 the case. Anybody that comes up with a specific number to  
3 seven decimal points is frankly preposterous in my view.

4 Q Well, I'm not asking for a specific number to  
5 seven decimal points, I'm content with a range. But my  
6 question was with you earlier, I thought we had said -- and  
7 part of the whole purpose of the deposition is to have a  
8 clear understanding of what a witness is going to say at  
9 trial and my understanding at the conclusion of my questions  
10 was you were going to state your opinion of 100 to 200 parts  
11 per million over a period of one to two minutes' range on  
12 both concentration and duration. Then you said it could  
13 have been 300. I want to know why one could be able to make  
14 a cavalier jump and add 50 percent to a range, and then say  
15 anybody who has a number is a fool. Are we at 100 to 200?

16 A A number is a specific number, excuse me. A  
17 range is something else. You kept saying a number.

18 Q All right. Let me put it this way and maybe  
19 I'm arguing over nothing. As we sit here is it your best  
20 opinion, the opinion to which you hold to the greatest  
21 degree of confidence, that the range of exposure that  
22 Mr. Newman experienced was 100 to 200 parts per million of  
23 sulfur dioxide gas for a period of one to two minutes?

24 A Yes, but it must be understood that there is  
25 going to be a concentration build up. So really the range

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1 starts at ambient concentrations, outdoor air concentrations  
2 absent any release from the Ivorydale plant and then it  
3 builds up to that.

4 Q Maybe the fool with the precise number, he  
5 would have to specify an exact moment in time because it's  
6 going to change?

7 A Yes, exactly.

8 Q You said something dispute about evacuation.  
9 What does that mean?

10 A I don't know what I said and in what context.

11 Q He was asking you questions about alarms  
12 versus intercoms and you said you understood there was a  
13 dispute about evacuation?

14 A My understanding is Mr. Newman had some  
15 questions, should we evacuate the building or not; do I  
16 leave or do I stay. And that was the dispute. That is what  
17 I meant as dispute. Maybe not a dispute, maybe a  
18 questioning on his part whether it was safe to stay.

19 Q And you don't have any information that  
20 suggested he talked with anybody at P&G about that, correct?

21 A That's right.

22 Q The example you used in response to a  
23 question about a supervisor asked why are all these people  
24 choking or having these symptoms. You used that to describe  
25 some people have symptoms and others don't. Let me just

190  
1 make sure I understand. Is it fair to say that some people  
2 might not smell the gas at the same parts per million  
3 concentration as their neighbor might?

4 A Absolutely, that is what these data speak to,  
5 among other things.

6 Q Okay. Yet the inability to smell it will not  
7 prevent those people from having symptoms based upon, as we  
8 discussed earlier, the indiscriminate manner in which sulfur  
9 dioxide will form sulfurous acid in the moist mucous  
10 membranes of the nose and mouth of whoever it happens to  
11 contact; is that fair?

12 A Is that a question? I'm sorry, I didn't  
13 follow you.

14 Q I just want to make sure that you and I agree  
15 or at least if you agree with me, we can explore it. People  
16 may have different powers of perceiving sulfur dioxide using  
17 their sense of smell?

18 A That's a given; we know that.

19 Q And there is a range, as indicated in the  
20 table you read from a few moments ago which when people can  
21 smell it and when people can smell and identify it, I guess,  
22 is what it's saying, agreed?

23 A Agreed.

24 Q Yet even if a person can't smell it, that  
25 sulfur dioxide is going to not discriminate on the basis of

191  
1 olfactory power, but just simply if I have a mucous membrane  
2 where this reaction can begin, what is it stoichiometrical  
3 reaction can begin and the sulfurous acid begin to form,  
4 they're going to begin experiencing the symptoms of teary  
5 eyes or sneezing or that burning sensation; fair enough?

6 A Well, as you're talking I can postulate all  
7 sorts of scenarios, but fair enough in a general sense.  
8 Yes.

9 Q Because sulfur dioxide doesn't know and it  
10 doesn't care as long as it has the things it needs to make a  
11 reaction, it's going to make a reaction?

12 A Concentration determines the depth of  
13 penetration and the tissue sites where the damage might  
14 occur.

15 Q Assuming the concentration for two different  
16 people are the same, that is going to take care of itself?

17 A Exactly.

18 Q One of the letters that you were provided was  
19 a letter from Procter & Gamble regarding a quote that said  
20 there was only a small release?

21 A Right.

22 Q But while that letter was provided to you, I  
23 did not see it. This issue came up in another deposition.  
24 I still have not seen that letter?

25 MS. STORM: I faxed it to Jeanette, I'm sure I

1 did.

2 A It wasn't a letter. It was a response to an  
3 interrogatory.

4 Q No, there is a letter as well.

5 MS. STORM: There is a letter. Off the record.

6 (Off-the-record discussion.)

7 Q You mentioned with respect to pulmonary  
8 problems experienced by Mr. Newman that he had one component  
9 that was restrictive and one that was obstructive?

10 A It seems to me I read that in some of the  
11 medical reports and I don't recall where.

12 Q All right.

13 A Off the top of my head I'm sorry, I can't.

14 Q I'm trying to get an understanding of what  
15 the difference would be between those.

16 A I really -- I think I would be getting far  
17 afield in the field of pulmonology. I'm not a  
18 pulmonologist.

19 Q Would it be fair for me to say then that with  
20 respect to those pulmonary issues, you would refer me to the  
21 pulmonary specialist?

22 A Yes.

23 MR. THOMAS: All right. I have no further  
24 questions.

25 MR. SCOTT: No further questions.

1 (Deposition concluded at 4:48 p.m.)  
2  
3 (Signature Waived.)  
4 Roger Wabeke  
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C E R T I F I C A T E

STATE OF OHIO :  
COUNTY OF CLERMONT : SS

I, Kathy Simpson, Notary Public for the State of Ohio, duly qualified and commissioned, do hereby certify before giving of his deposition, the within-named Roger Wabeke was by me, Kathy Simpson, first duly sworn to depose the truth, the whole truth, and nothing but the truth; that the foregoing is the deposition given at said time and place by the said Roger Wabeke; that said deposition was taken in all respects pursuant to agreement as to time and place; that said deposition was taken by me in stenotype and transcribed into typewriting by computer under my supervision; and that the signature of the deponent was expressly waived

I further certify that I am not counsel attorney, relative or employee of any of the parties hereto, or in any way interested in the within action, and that I was at the time of taking said deposition a Notary Public for State of Ohio.

IN WITNESS WHEREOF, I have hereunto set my hand and Notarial seal this 27th day of November, 2002.

My commission expires  
February 20, 2007

\_\_\_\_\_  
Kathy Simpson  
Notary Public - State of Ohio